

PRELIMINARY INVESTIGATION OF THE
NORTON LABS SITE
CITY OF LOCKPORT, NIAGARA COUNTY, NEW YORK

PHASE I. SUMMARY REPORT

Prepared for

New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Prepared by

Ecological Analysts, Inc.
R.D. 2, Goshen Turnpike
Middletown, New York 10940

September 1984

203940



CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	
1. SITE DESCRIPTION	1-1
2. USGS QUAD WITH SITE BOUNDARIES MARKED	2-1
3. PRELIMINARY HRS	3-1
4. DOCUMENTATION RECORDS FOR HRS	4-1
5. PRELIMINARY EPA SITE ASSESSMENT FORMS	5-1
5.1 EPA Form 2070-12 - Preliminary Assessment	5.1-1
5.2 EPA Form 2070-13 - Site Inspection Report	5.2-1
5.3 Site Inspection Summary	5.3-1
6. SITE HISTORY	6-1
7. SITE DATA	7-1
7.1 Site Area Surface Features	7-1
7.2 Site Hydrogeology	
7.3 Summary of Past Sampling and Analysis	
8. ADEQUACY OF AVAILABLE DATA TO PREPARE FINAL HRS	8-1
9. PHASE II WORK PLAN	9-1
9.1 Detailed Work Plan	9-1
9.2 Health and Safety Plan	
9.3 Cost Estimate	
APPENDIX: HAZARDOUS WASTE DISPOSAL SITES REPORT, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION	

EXECUTIVE SUMMARY

The Norton Labs Site (New York ID No. 932029, EPA ID No. NYD030212799) is an inactive landfill located south of Mill Street in Lockport, Niagara County, New York. Norton Labs is no longer in business. A portion of the site belongs to Somerset Railroad Corporation, Binghamton, New York. The site was closed in 1976 after what is believed to have been at least 12 years of operation. During its operation, it is estimated that over 2,000 tons of solid phenolic and polyester based plastics and at least 3,000 gallons of lubricating oil have been landfilled. In August of 1982, during the construction of a bordering railroad bed, two drums were punctured which released a green, oily substance. Subsequent analyses found the drum to contain approximately 175 mg/liter phenol and the surrounding soil to be contaminated with 6.5 mg/Kg PCBs.

Somerset Railroad Corporation has installed 22 monitoring wells along the railroad right-of-way in the vicinity of the Norton Labs site, including two shallow wells screened in the fill. Several wells were sampled in 1981 revealing only some possible oil and grease contamination within the fill. PCBs were not detected in any of the monitoring wells sampled.

The preliminary HRS scores for this site are as follows: Migration Score (S_M) = 6.10; Direct Contact Score (S_{DC}) = 0. The S_M is relatively low owing to a lack of any known drinking water wells or surface water intakes in the area. The available data are considered inadequate for preparing final HRS scores. Although Somerset Railroad has installed an extensive network of ground water monitoring wells at and near the site, the analyses completed to date have only included metals, PCBs, and volatile organics. Given the nature of wastes in the ruptured drums (phenolics) and the reported oil dumping, ground water should be examined for acid phenolics and base neutral compounds in order to confirm or rule out a release of contaminants to ground water. In the event that ground water contamination is confirmed, the maximum S_M (assuming a highly toxic and highly persistent compound is detected) would be 7.29.

In order to rule out the possibility of ground water and surface water contamination at the Norton site, additional sampling of onsite monitoring wells, and surface drainage to Eighteen Mile Creek, is recommended. Samples should be examined, at a minimum, for base neutral and acid phenolic priority pollutants. Full priority pollutant scans are recommended. The cost estimate for Phase II is \$13,100. If Somerset Railroad can provide the recommended data, a decision to proceed with a Phase II report should be contingent on the results of their further sampling. One complicating factor that should be recognized if contamination is detected is the presence of another industrial waste landfill adjacent to the Norton Labs landfill.

NORTON LABS

The Norton Labs Site (New York ID No. 932029, EPA ID No. NYD030212799) is an inactive landfill located south of Mill Street in Lockport, Niagara County, New York. Norton Labs is no longer in business. A portion of the site belongs to Somerset Railroad Corporation, Binghamton, New York. The site was closed in 1976 after what is believed to have been at least 12 years of operation. During its operation, it is estimated that over 2,000 tons of solid phenolic and polyster based plastics and at least 3,000 gallons of lubricating oil have been landfilled. In August of 1982, during the construction of a bordering railroad bed, two drums were punctured which released a green, oily substance. Subsequent analyses found the drum to contain approximately 175 mg/liter phenol and the surrounding soil to be contaminated with 6.5 mg/Kg PCBs.

Somerset Railroad Corporation has installed 22 monitoring wells along the railroad right-of-way in the vicinity of the Norton Labs site, including two shallow wells screened in the fill. Several wells were sampled in 1981 revealing only some possible oil and grease contamination within the fill. PCBs were not detected in any of the monitoring wells sampled.



NORTON LABS SITE
LOCKPORT QUAD

LOCKPORT

Federal Register

Friday
July 16, 1982

Norton Labs Site

Part V

Environmental Protection Agency

National Oil and Hazardous Substances
Contingency Plan

Federal Register

Friday
July 16, 1982

Norton Labs Site

Part V

Environmental Protection Agency

National Oil and Hazardous Substances
Contingency Plan

Facility name: Norton Labs Landfill

Location: Lockport, Niagara County, N.Y.

EPA Region: II

Person(s) in charge of the facility: Somerset Railroad Corp.
4500 Vestal Pkwy East
Binghamton, N.Y. 13902

Name of Reviewer: Ecological Analysts, Inc Date: 9/12/83

General description of the facility:
 (For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

The Norton Labs site is an inactive landfill used by
plastics mfg. The only known wastes disposed here
are solid waste plastic @ 20,000 lbs/yr and waste
oil at 250 gallons/yr. Site operated 12 years or more
up to 1976. Excavation by Somerset Railroad punctured
2 drums containing green oil. Oil contained phenol
and oil soaked soil contained PCBs. Groundwater shows
elevated oil and grease.

Scores: $S_M = 6.10$ $S_{gw} = 8.16$ $S_{sw} = 6.7$ $S_a = 0$

$S_{FE} = NA$

$S_{DC} = 0$

Max $S_M = 7.29$

FIGURE 1
HRS COVER SHEET

SELLING CODE 6560-80-C

Ground Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)	
1 Observed Release	<u>0</u> 45	1	<u>0</u>	45	3.1	
If observed release is given a score of 45, proceed to line 4 .						
If observed release is given a score of 0, proceed to line 2 .						
2 Route Characteristics					3.2	
Depth to Aquifer of Concern	0 1 2 <u>3</u>	2	<u>6</u>	6		
Net Precipitation	0 1 <u>2</u> 3	1	<u>2</u>	3		
Permeability of the Unsaturated Zone	0 1 <u>2</u> 3	1	<u>2</u>	3		
Physical State	0 1 2 <u>3</u>	1	<u>3</u>	3		
Total Route Characteristics Score			<u>13</u>	15		
3 Containment	0 1 2 <u>3</u>	1	<u>3</u>	3	3.3	
4 Waste Characteristics					3.4	
Toxicity/Persistence	0 3 6 9 12 15 <u>18</u>	1	<u>18</u>	18		
Hazardous Waste Quantity	0 1 <u>2</u> 3 4 5 6 7 8	1	<u>2</u>	8		
Total Waste Characteristics Score			<u>20</u>	26		
5 Targets					3.5	
Ground Water Use	0 1 <u>2</u> 3	3	<u>6</u>	9		
Distance to Nearest Well/Population Served	<u>0</u> 4 6 8 10 12 16 18 20 24 30 32 35 40	1	<u>0</u>	40		
UNKNOWN } MINIMAL USE OF PRIVATE WELLS IN AREA						
Total Targets Score			<u>6</u>	49		
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			<u>4680</u>	57,330		
7 Divide line 6 by 57,330 and multiply by 100			$S_{gw} = 8.16$			

FIGURE 2
GROUND WATER ROUTE WORK SHEET

MAY = 9.42
Assuming no use of
drinking water wells
in aquifer of concern

Surface Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)	
1 Observed Release	<u>0</u> 45	1	<u>0</u>	45	4.1	
If observed release is given a value of 45, proceed to line 4 . If observed release is given a value of 0, proceed to line 2 .						
2 Route Characteristics					4.2	
Facility Slope and Intervening Terrain	0 1 <u>2</u> 3	1	<u>2</u>	3		
1-yr. 24-hr. Rainfall	0 <u>1</u> 2 3	1	<u>1</u>	3		
Distance to Nearest Surface Water	0 1 2 <u>3</u>	2	<u>6</u>	6		
Physical State	0 1 2 <u>3</u>	1	<u>3</u>	3		
Total Route Characteristics Score			<u>12</u>	15		
3 Containment	0 1 2 <u>3</u>	1	<u>3</u>	3	4.3	
4 Waste Characteristics					4.4	
Toxicity/Persistence	0 3 6 9 12 15 <u>18</u>	1	<u>18</u>	18		
Hazardous Waste Quantity	0 1 <u>2</u> 3 4 5 6 7 8	1	<u>2</u>	8		
Total Waste Characteristics Score			<u>20</u>	26		
5 Targets					4.5	
Surface Water Use	0 1 <u>2</u> 3	3	<u>6</u>	9		
Distance to a Sensitive Environment	<u>0</u> 1 2 3	2	<u>0</u>	6		
Population Served/Distance to Water Intake Downstream	<u>0</u> 4 6 8 10 12 16 18 20 24 30 32 35 40	1	<u>0</u>	40		
Total Targets Score			<u>6</u>	55		
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			<u>4,320</u>	64,350		
7 Divide line 6 by 64,350 and multiply by 100			$S_{SW} = 6.71$			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Max = 8.39

Air Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)	
1 Observed Release	0 45	1	0	45	5.1	
Date and Location:						
Sampling Protocol:						
If line 1 is 0, the $S_a = 0$. Enter on line 5 If line 1 is 45, then proceed to line 2						
2 Waste Characteristics					5.2	
Reactivity and Incompatibility	0 1 2 3	1		3		
Toxicity	0 1 2 3	3		9		
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8		
Total Waste Characteristics Score				20		
3 Targets					5.3	
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30		
Distance to Sensitive Environment	0 1 2 3	2		6		
Land Use	0 1 2 3	1		3		
Total Targets Score				39		
4 Multiply 1 x 2 x 3				35,100		
5 Divide line 4 by 35,100 and multiply by 100				$S_a = 0$		

FIGURE 9
AIR ROUTE WORK SHEET

BILLING CODE 6560-60-C

four-mile radius as well as transients such as workers in factories, offices, restaurants, motels, or students. It excludes travelers passing through the area. If aerial photography is used in making the count, assume 3.6 individuals per dwelling unit. Select the highest value for this rating factor as follows:

DISTANCE TO POPULATION FROM HAZARDOUS SUBSTANCE

Population	0-1/4 miles	0-1 mile	0-1/2 mile	0-1 mile
0	0	0	0	0
1 to 100	9	12	18	18
101 to 1,000	12	15	18	21
1,001 to 3,000	15	18	21	24
3,001 to 10,000	18	21	24	27
More than 10,000	21	24	27	30

Distance to sensitive environment is an indicator of the likelihood that a region that contains important biological resources or that is a fragile natural setting would suffer serious damage if hazardous substances were to be released from the facility. Assign a value from Table 10.

Land use indicates the nature and level of human activity in the vicinity of a facility. Assign highest applicable value from Table 13.

6.0 Computing the Migration Hazard Mode Score, S_M

To compute S_M , complete the work sheet (Figure 10) using the values of S_{gw} , S_{sw} , and S_a obtained from the previous sections.

7.0 Fire and Explosion

Compute a score for the fire and explosion hazard mode, S_{FE} , when either a state or local fire marshal has certified that the facility presents a significant fire or explosion threat to the public or to sensitive environments or there is a demonstrated fire and explosion threat based on field observations (e.g., combustible gas indicator readings). Document the threat.

7.1 Containment. Containment is an indicator of the measures that have been taken to minimize or prevent hazardous substances at the facility from catching fire or exploding. Normally it will be given a value of 3 on the work sheet (Figure 11). If no hazardous substances that are individually ignitable or explosive are present and those that may be hazardous in combination are segregated and isolated so that they cannot come together to form incompatible mixtures, assign this factor a value of 1.

7.2 Waste Characteristics. Direct evidence of ignitability or explosion potential may exist in the form of measurements with appropriate instruments. If so, assign this factor a value of 3; if not, assign a value of 0.

TABLE 13.—VALUES FOR LAND USE (AIR ROUTE)

Assigned value—	0	1	2	3
Distance to Commercial-Industrial	> 1 mile	1/2 to 1 mile	1/4 to 1/2 mile	< 1/4 mile
Distance to National/State Parks, Forests, Wildlife Reserves, and Residential Areas	> 2 miles	1 to 2 miles	1/2 to 1 mile	< 1/2 mile
Distance to Agricultural Lands (in Production within 5 years):				
Ag land	> 1 mile	1/2 to 1 mile	1/4 to 1/2 mile	< 1/4 mile
Prime Ag Land ¹	> 2 miles	1 to 2 miles	1/2 to 1 mile	< 1/2 mile
Distance to Historic/Landmark Sites (National Register of Historic Places and National Natural Landmarks)				Within view of site or if site is subject to significant impacts.

¹ Defined in the Code of Federal Regulations, 7 CFR 657.5, 1981.

	S	S ²
Groundwater Route Score (S_{gw})	8.16	66.59
Surface Water Route Score (S_{sw})	6.71	45.02
Air Route Score (S_a)	0.	0.
$S_{gw}^2 + S_{sw}^2 + S_a^2$		111.61
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		10.56
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M$		6.10

FIGURE 10
WORKSHEET FOR COMPUTING S_M

Max $S_M = 7.29$

Direct Contact Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi- plier	Score	Max. Score	Ref. (Section)	
1 Observed Incident	<u>0</u> 45	1	<u>0</u>	45	8.1	
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2						
2 Accessibility	0 1 2 3	1		3	8.2	
3 Containment	<u>0</u> 15	1	<u>0</u>	15	8.3	
4 Waste Characteristics Toxicity	0 1 2 3	5		15	8.4	
5 Targets					8.5	
Population Within a 1-Mile Radius	0 1 2 3 4 5	4		20		
Distance to a Critical Habitat	0 1 2 3	4		12		
Total Targets Score					32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			<u>0</u>	21,600		
7 Divide line 6 by 21,600 and multiply by 100			SDC = <u>0</u>			

FIGURE 12
DIRECT CONTACT WORK SHEET

June 28, 1982

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME:

NORTON LABS LANDFILL

LOCATION:

520 MILL ST. LOCKPORT, NIAGARA

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

Lead

Oil + grease

Arsenic

Rationale for attributing the contaminants to the facility:

Low levels detected may be attributable to waste oil dumping at Norton Landfill. Data are lacking of base neutral compounds. * * * Not a good confirmation. Score = 0

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifers(s) of concern:

Shallow unconsolidated aquifer above bedrock.

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

~ 5 ft

(See Section 7.2)

Depth from the ground surface to the lowest point of waste disposal/storage:

≤ 20 ft

(See Section 6
and Section 7.2)

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

35 "

Mean annual lake or seasonal evaporation (list months for seasonal):

26 "

Net precipitation (subtract the above figures):

9 "

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Unconsolidated material above bedrock appears to be typically fine sand, coarse sand, some clay (See Section 7.2)

Permeability associated with soil type:

Assume $< 10^{-3} > 10^{-5}$ cm/sec for overburden.

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

Liquids (oils)

Solids (See Section 6)

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Liner & leachate collection

Method with highest score:

No liner or leachate collection

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

PCBs

Phenol

Lead

(See Sections 6 and 7.3)

Compound with highest score:

PCBs

(3, 3)

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

*250 gallons waste oils/year for at least 12 years =
3,000 gallons waste oils*

Basis of estimating and/or computing waste quantity:

*NYSDEC files contain Industrial Waste Survey which
Lists 250 galls/yr. Also, landfill was active before
1965 and closed 1976.** (see Section 6)*

5 TARGETS

Ground Water Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Possibly used for rural drinking water source.

However, most of Niagara County (~95%) is on county supply. (Ref. New York State Atlas of Community Water

Distance to Nearest Well

System Sources, 1982).

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

Unknown

Distance to above well or building:

Unknown

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

Assume 1-100, but unknown if any wells in unconsolidated aquifer

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

None Known

Total population served by ground water within a 3-mile radius:

Assume 1-100 at best. However, without verification, score = 0.

SURFACE WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

Zinc

Rationale for attributing the contaminants to the facility:

Zinc is also highest in the land fill wells compared to the other monitoring wells. Not a good confirmation of release Score = 0

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

< 3%

Name/description of nearest downslope surface water:

Eighteen Mile Creek via Railroad Cut

Average slope of terrain between facility and above-cited surface water body in percent:

> 8%

Is the facility located either totally or partially in surface water?

No

Is the facility completely surrounded by areas of higher elevation?

No

1-Year 24-Hour Rainfall in Inches

2.0"

Distance to Nearest Downslope Surface Water

~ 500 ft.

Physical State of Waste

Liquids, solids

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Runoff diversion

Cover

Method with highest score:

No runoff diversion

Cover does not appear adequate. (Based on Site Inspection)

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

PCBs Lead
Zinc Phenol

Compound with highest score:

PCBs

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Waste oils. Approx 3,000 gallons

Basis of estimating and/or computing waste quantity:

250 galls/year x at least 12 years (See Section 6)

5 TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

Recreational

Is there tidal influence?

No

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

None

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

None

Wetland south of site is approximately 1 acre or less.

(See Attachment 7.3-1 Map).

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

None Known

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

None

Computation of land area irrigated by above-cited intake(s) and
conversion to population (1.5 people per acre):

Total population served:

None

Name/description of nearest of above water bodies:

Eighteen Mile Creek

Distance to above-cited intakes, measured in stream miles.

NA

AIR ROUTE

1 OBSERVED RELEASE

No data

Contaminants detected:

Date and location of detection of contaminants

Methods used to detect the contaminants:

Rationale for attributing the contaminants to the site:

* * *

2 WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

Most incompatible pair of compounds:

Toxicity

Most toxic compound:

Hazardous Waste Quantity

Total quantity of hazardous waste:

Basis of estimating and/or computing waste quantity:

* * *

3 TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi 0 to 1 mi 0 to 1/2 mi 0 to 1/4 mi

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

Distance to critical habitat of an endangered species, if 1 mile or less:

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

Distance to residential area, if 2 miles or less:

Distance to agricultural land in production within past 5 years, if 1 mile or less:

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

5.1



Potential Hazardous Waste Site

Preliminary Assessment



Preliminary Assessment



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

NY 1030212799

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)

NORTON LABS

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER

520 MILL STREET

03 CITY

LOCKPORT

04 STATE

NY

05 ZIP CODE

06 COUNTY

NIAGARA

07 COUNTY CODE

08 CONG DIST

09 COORDINATES LATITUDE

LONGITUDE

10 DIRECTIONS TO SITE (Starting from nearest public road)

Located south side of Millstreet, 1/4 mile west of large building on north side of Mill street @ roadway intersection

III. RESPONSIBLE PARTIES

01 OWNER (if known)

SOMERSET RAILROAD CORP.

02 STREET (Business, mailing, residential)

4500 VESTAL PARKWAY East

03 CITY

BINGHAMTON

04 STATE

NY

05 ZIP CODE

13902

06 TELEPHONE NUMBER

(607) 729-2551

07 OPERATOR (if known and different from owner)

08 STREET (Business, mailing, residential)

09 CITY

10 STATE

11 ZIP CODE

12 TELEPHONE NUMBER

()

13 TYPE OF OWNERSHIP (Check one)

☒ A. PRIVATE

☐ B. FEDERAL

SOMERSET RAILROAD CORP.

(Agency name)

☐ C. STATE

☐ D. COUNTY

☐ E. MUNICIPAL

☐ F. OTHER:

(Specify)

☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: / /

MONTH DAY YEAR

☐ B. UNCONTROLLED WASTE SITE (RCRA 103 c) DATE RECEIVED: / /

MONTH DAY YEAR

☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☐ YES

DATE

/ /

☐ NO

MONTH DAY YEAR

BY (Check all that apply)

☐ A. EPA

☐ B. EPA CONTRACTOR

☐ C. STATE

☐ D. OTHER CONTRACTOR

☐ E. LOCAL HEALTH OFFICIAL

☐ F. OTHER:

(Specify)

CONTRACTOR NAME(S):

02 SITE STATUS (Check one)

☐ A. ACTIVE

☐ B. INACTIVE

☐ C. UNKNOWN

03 YEARS OF OPERATION

< 1965 (?)

1976

BEGINNING YEAR

ENDING YEAR

☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

PHENOLIC 3 POLYESTER BASED PLASTICS - KNOWN

DRUMS W/ PHENOL - KNOWN

WASTE LUBRICATING OIL - KNOWN

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

Possible ground and surface water contamination due to PCB presence in soil, phenol in drums, and possible metals in groundwater

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)

☐ A. HIGH

(Inspection required promptly)

☐ B. MEDIUM

(Inspection required)

☐ C. LOW

(Inspect on time available basis)

☐ D. NONE

(No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT

RAYMOND KAPP

02 OF (Agency/Organization)

ECOLOGICAL ANALYSTS, INC

03 TELEPHONE NUMBER

914 1-962-6706

04 PERSON RESPONSIBLE FOR ASSESSMENT

PAUL FLEMING

05 AGENCY

EA

06 ORGANIZATION

07 TELEPHONE NUMBER

()

08 DATE

9, 8, 83

MONTH DAY YEAR



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NYD 030212799

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 1-100 04 NARRATIVE DESCRIPTION
Possible due to slightly elevated arsenic. Oil & grease confirmed in groundwater, origin is suspected to be PCB contaminated waste oil.

01 ☒ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Eighteen Mile Creek receives water from RR cut which collects site groundwater

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
NONE KNOWN

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
None reported

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
None reported

01 ☒ F. CONTAMINATION OF SOIL 02 ☒ OBSERVED (DATE: AUG, 1981) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: 24.0 04 NARRATIVE DESCRIPTION
(Acres)
PCB contamination confirmed

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
None Known. No known wells in the area

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
None reported

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
None reported



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

NY *030212 799*

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

None reported

01 ☐ K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

None reported

01 ☐ L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

NA

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES
(Spills/runoff/standing liquids/leaking drums)

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

None reported

01 ☐ N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

None reported

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

None Known

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

None reported other than described in Section 6.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: *1-100 MAX; None Known*

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)

DEC FILES

New York State Atlas of Community Water System Sources, 1982



Potential Hazardous Waste Site

Site Inspection Report



Site Inspection Report



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NYD 030312799

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) NORTON LABS		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER 520 MILL STREET				
03 CITY LOCKPORT		04 STATE NY	05 ZIP CODE	06 COUNTY NIAGARA	07 COUNTY CODE	08 CONG DIST
09 COORDINATES LATITUDE _____ LONGITUDE _____		10 TYPE OF OWNERSHIP (Check one) <input checked="" type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER _____ <input type="checkbox"/> G. UNKNOWN				

III. INSPECTION INFORMATION

01 DATE OF INSPECTION 5/12/83 MONTH DAY YEAR	02 SITE STATUS <input type="checkbox"/> ACTIVE <input checked="" type="checkbox"/> INACTIVE	03 YEARS OF OPERATION < 1965 (?) 1976 BEGINNING YEAR ENDING YEAR	
04 AGENCY PERFORMING INSPECTION (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR ECOLOGICAL <input type="checkbox"/> C. MUNICIPAL <input type="checkbox"/> D. MUNICIPAL CONTRACTOR <input type="checkbox"/> E. STATE <input checked="" type="checkbox"/> F. STATE CONTRACTOR ANALYSTS <input type="checkbox"/> G. OTHER _____ (Name of firm) (Name of firm) (Specify)			

05 CHIEF INSPECTOR DR. C. HOULIK	06 TITLE GEOLOGIST	07 ORGANIZATION EA	08 TELEPHONE NO. (301) 771-4950
09 OTHER INSPECTORS MR. WILLIAM GOING	10 TITLE SCIENTIST	11 ORGANIZATION EA	12 TELEPHONE NO. (94) 962-6706
			()
			()
			()
			()
13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO. ()
			()
			()
			()
			()
			()
			()
			()

17 ACCESS GAINED BY (Check one) <input type="checkbox"/> PERMISSION <input type="checkbox"/> WARRANT	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
--	-----------------------	-----------------------

IV. INFORMATION AVAILABLE FROM

01 CONTACT RAYMOND KAPP	02 OF (Agency/Organization) ECOLOGICAL ANALYSTS, INC		03 TELEPHONE NO. (914) 692-6706
04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM PAUL FLEMING	05 AGENCY	06 ORGANIZATION EA	07 TELEPHONE NO. 914-692-6706
			08 DATE 8, 22, 83 MONTH DAY YEAR



01 PHYSICAL STATES (Check all that apply)	02 WASTE QUANTITY AT SITE (Measure of waste quantities must be independent)	03 WASTE CHARACTERISTICS (Check all that apply)
<input checked="" type="checkbox"/> A. SOLID <input type="checkbox"/> B. POWDER, FINES <input type="checkbox"/> C. SLUDGE <input checked="" type="checkbox"/> D. OTHER <u>WASTE OIL PLASTIC</u> <small>(Specify)</small>	<input type="checkbox"/> E. SLURRY <input type="checkbox"/> F. LIQUID <input type="checkbox"/> G. GAS TONS <u>135 PLASTIC/YR.</u> CUBIC YARDS _____ <u>GAL</u> NO. OF DRUMS <u>250 YR/101L</u>	<input checked="" type="checkbox"/> A. TOXIC <input type="checkbox"/> B. CORROSIVE <input type="checkbox"/> C. RADIOACTIVE <input checked="" type="checkbox"/> D. PERSISTENT <input type="checkbox"/> E. SOLUBLE <input type="checkbox"/> F. INFECTIOUS <input type="checkbox"/> G. FLAMMABLE <input type="checkbox"/> H. IGNITABLE <input type="checkbox"/> I. HIGHLY VOLATILE <input type="checkbox"/> J. EXPLOSIVE <input type="checkbox"/> K. REACTIVE <input type="checkbox"/> L. INCOMPATIBLE <input type="checkbox"/> M. NOT APPLICABLE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	<u>OILY WASTE</u>	2,500	GALLONS	GROSS AMT. ESTIMATED ON
SOL	<u>SOLVENTS</u>	2	DRUMS	250 GALS/PR. @ 10 YRS. OPERATION
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS OTHER	900-1,000	POUNDS/DAY	PHENOLIC & POLYESTER BASED PLASTICS

[illegible]

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

DEC REPORT FROM DEC REG. 9 FILE
DEC ALBANY FILE - NORTON'S RESPONSE TO WASTE SURVEY
DEC ENVR. REG. FILE (EITSMANN)



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

NY 030212799

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: 1-100

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☒ POTENTIAL

☐ ALLEGED

low levels of metals detected in groundwater. PCB found in soil, could contaminate groundwater. Phasids known to be onsite - have not been tested

01 ☐ B. SURFACE WATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

NONE DETECTED

01 ☐ C. CONTAMINATION OF AIR

03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

NONE KNOWN

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS

03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

None reported

01 ☐ E. DIRECT CONTACT

03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

None reported

01 ☒ F. CONTAMINATION OF SOIL

03 AREA POTENTIALLY AFFECTED: 4
(Acres)

02 ☒ OBSERVED (DATE: Aug. 1982)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

Drums were punctured which contaminated surrounding soil, testing indicated PCB's - soil was removed

01 ☒ G. DRINKING WATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: Unknown

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☒ POTENTIAL

☐ ALLEGED

NONE KNOWN. NO KNOWN wells in the area.

01 ☐ H. WORKER EXPOSURE/INJURY

03 WORKERS POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

None reported

01 ☐ I. POPULATION EXPOSURE/INJURY

03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

None reported



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

N.Y.D 030212799

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

None reported

01 ☐ K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

None reported

01 ☐ L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

NA

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES
(Spills/Runoff/Standing liquids, Leaking drums)
03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION

None reported

01 ☒ N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

*Railroad is monitoring seepage from fill which flows down the R.R. cut into
Eighteen Mile Creek*

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

None reported

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

None reported other than described in Section 6.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 1-100 MAXIMUM; NONE KNOWN

IV. COMMENTS

Railroad may not be monitoring proper parameters

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)

DEC ENVR REG. FILE (P. EISHAMON)

New York State Atlas of Community Water System Sources, 1982



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 030212799

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
<input type="checkbox"/> A. NPDES				
<input type="checkbox"/> B. UIC				
<input type="checkbox"/> C. AIR				
<input type="checkbox"/> D. RCRA				
<input type="checkbox"/> E. RCRA INTERIM STATUS				
<input type="checkbox"/> F. SPCC PLAN				
<input type="checkbox"/> G. STATE (Specify)				
<input type="checkbox"/> H. LOCAL (Specify)				
<input type="checkbox"/> I. OTHER (Specify)				
<input type="checkbox"/> J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)	05 OTHER
<input type="checkbox"/> A. SURFACE IMPOUNDMENT			<input type="checkbox"/> A. INCINERATION	<input type="checkbox"/> A. BUILDINGS ON SITE
<input type="checkbox"/> B. PILES			<input type="checkbox"/> B. UNDERGROUND INJECTION	
<input type="checkbox"/> C. DRUMS, ABOVE GROUND			<input type="checkbox"/> C. CHEMICAL/PHYSICAL	
<input type="checkbox"/> D. TANK, ABOVE GROUND			<input type="checkbox"/> D. BIOLOGICAL	
<input type="checkbox"/> E. TANK, BELOW GROUND			<input type="checkbox"/> E. WASTE OIL PROCESSING	
<input checked="" type="checkbox"/> F. LANDFILL	1,825	TONS	<input type="checkbox"/> F. SOLVENT RECOVERY	06 AREA OF SITE
<input type="checkbox"/> G. LANDFARM	3		<input type="checkbox"/> G. OTHER RECYCLING/RECOVERY	~4.0 (Acres)
<input type="checkbox"/> H. OPEN DUMP	2,500	GALS	<input type="checkbox"/> H. OTHER (Specify)	
<input type="checkbox"/> I. OTHER (Specify)				

07 COMMENTS

1,000 ROUNDS/DAY \times $\frac{365 \text{ days}}{\text{yr.}}$ \times 10 YRS. = 1,825 TONS
250 GALS/YR \times 10 YRS. = 2,500 GALS.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☒ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

NO LINERS OR BARRIERS

GROUNDWATER IN FILL FLOWS INTO RAILROAD CUT

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS

NO FENCE

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

DEC REG. 9 FILE 3 Albany file



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

NJ 030212799

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)	02 STATUS	03 DISTANCE TO SITE															
<table><tr><td>SURFACE</td><td>WELL</td></tr><tr><td>COMMUNITY A. <input checked="" type="checkbox"/></td><td>B. <input type="checkbox"/></td></tr><tr><td>NON-COMMUNITY C. <input type="checkbox"/></td><td>D. <input type="checkbox"/></td></tr></table>	SURFACE	WELL	COMMUNITY A. <input checked="" type="checkbox"/>	B. <input type="checkbox"/>	NON-COMMUNITY C. <input type="checkbox"/>	D. <input type="checkbox"/>	<table><tr><td>ENDANGERED</td><td>AFFECTED</td><td>MONITORED</td></tr><tr><td>A. <input type="checkbox"/></td><td>B. <input type="checkbox"/></td><td>C. <input type="checkbox"/></td></tr><tr><td>D. <input type="checkbox"/></td><td>E. <input type="checkbox"/></td><td>F. <input type="checkbox"/></td></tr></table>	ENDANGERED	AFFECTED	MONITORED	A. <input type="checkbox"/>	B. <input type="checkbox"/>	C. <input type="checkbox"/>	D. <input type="checkbox"/>	E. <input type="checkbox"/>	F. <input type="checkbox"/>	A. <u>>20</u> (mi) B. _____ (mi)
SURFACE	WELL																
COMMUNITY A. <input checked="" type="checkbox"/>	B. <input type="checkbox"/>																
NON-COMMUNITY C. <input type="checkbox"/>	D. <input type="checkbox"/>																
ENDANGERED	AFFECTED	MONITORED															
A. <input type="checkbox"/>	B. <input type="checkbox"/>	C. <input type="checkbox"/>															
D. <input type="checkbox"/>	E. <input type="checkbox"/>	F. <input type="checkbox"/>															

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)				
<input type="checkbox"/> A. ONLY SOURCE FOR DRINKING <input checked="" type="checkbox"/> B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) <input type="checkbox"/> C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) <input type="checkbox"/> D. NOT USED, UNUSEABLE				
02 POPULATION SERVED BY GROUND WATER <u>1-100</u>		03 DISTANCE TO NEAREST DRINKING WATER WELL <u>~1-2</u> (mi)		
04 DEPTH TO GROUNDWATER <u><20</u> (ft)	05 DIRECTION OF GROUNDWATER FLOW <u>N-NW</u>	06 DEPTH TO AQUIFER OF CONCERN <u>5</u> (ft)	07 POTENTIAL YIELD OF AQUIFER _____ (gpd)	08 SOLE SOURCE AQUIFER <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

95% OF NIAGARA COUNTY IS PUBLIC WATER SUPPLY
∴ very limited population served by wells

10 RECHARGE AREA	11 DISCHARGE AREA
<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO
COMMENTS	COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)		
<input checked="" type="checkbox"/> A. RESERVOIR, RECREATION DRINKING WATER SOURCE <input type="checkbox"/> B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES <input type="checkbox"/> C. COMMERCIAL, INDUSTRIAL <input type="checkbox"/> D. NOT CURRENTLY USED		
02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER		
NAME:	AFFECTED	DISTANCE TO SITE
<u>EIGHTEEN MILE CREEK</u>	<input type="checkbox"/>	<u><1000 FEET</u> (mi)
_____	<input type="checkbox"/>	_____ (mi)
_____	<input type="checkbox"/>	_____ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN			02 DISTANCE TO NEAREST POPULATION
ONE (1) MILE OF SITE A. <u>1,000 - 3,000</u> NO. OF PERSONS	TWO (2) MILES OF SITE B. _____ NO. OF PERSONS	THREE (3) MILES OF SITE C. _____ NO. OF PERSONS	<u>1/4</u> (mi)
03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE _____			04 DISTANCE TO NEAREST OFF-SITE BUILDING <u>1/4</u> (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

SITE IS IN VICINITY OF THE CITY LIMITS, BEST DESCRIBED AS A VILLAGE SETTING WITH INDUSTRIAL PLANTS



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 0030212799

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☒ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☒ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK

0-15 (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE

UNKNOWN (ft)

05 SOIL pH

06 NET PRECIPITATION

9 (in)

07 ONE YEAR 24 HOUR RAINFALL

2.0 (in)

08 SLOPE
SITE SLOPE

<3 %

DIRECTION OF SITE SLOPE

NORTHWEST

TERRAIN AVERAGE SLOPE

>8 %

09 FLOOD POTENTIAL

SITE IS IN _____ YEAR FLOODPLAIN

10

☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE

OTHER

A. _____ (mi)

B. 500 FT. (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

None Known _____ (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL

RESIDENTIAL AREAS; NATIONAL/STATE PARKS,
FORESTS, OR WILDLIFE RESERVES

AGRICULTURAL LANDS
PRIME AG LAND AG LAND

A. < 1/4 (mi)

B. _____ (mi)

C. _____ (mi) D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The site rises to the south. The site is a vegetated field while surrounding areas have heavier vegetation. Railroad cut abuts western border. Industrial buildings surround site area.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

DEC FILE
CA inspection



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 030212799

II. SAMPLES TAKEN

NOTE BY EA

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

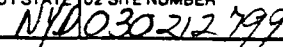
01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> AERIAL	02 IN CUSTODY OF <u>EA</u> <small>(Name of organization or individual)</small>
03 MAPS <input type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS _____

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)



PARENT COMPANY (If applicable)



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

NY 030212799

II. CURRENT OPERATOR (Provide if different from owner)

OPERATOR'S PARENT COMPANY (If applicable)

01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER					

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					

01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					

01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

--	--	--	--	--	--	--	--



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

NY 030212799

II. ON-SITE GENERATOR

01 NAME NORTON LABS, INC	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.) 520 Mill Street	04 SIC CODE	
05 CITY Lockport	06 STATE NY	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	05 CITY	06 STATE
07 ZIP CODE		07 ZIP CODE	
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	05 CITY	06 STATE
07 ZIP CODE		07 ZIP CODE	

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	05 CITY	06 STATE
07 ZIP CODE		07 ZIP CODE	
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	05 CITY	06 STATE
07 ZIP CODE		07 ZIP CODE	

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

DEC Files, Albany,



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

NY 030212799

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☒ D. SPILLED MATERIAL REMOVED
04 DESCRIPTION

02 DATE AUG. 1981

03 AGENCY SCA CHEMICAL SERVICES

CONTAMINATED SOIL REMOVED

01 ☒ E. CONTAMINATED SOIL REMOVED
04 DESCRIPTION

02 DATE 8/82

03 AGENCY LANE CONSTRUCTION, INC

DRUM, PUNCTURED DURING R.R. CONSTRUCTION, SPILLED ON SOIL IN AUG. '82, THEN REMOVED

01 ☐ F. WASTE REPACKAGED
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ G. WASTE DISPOSED ELSEWHERE
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ H. ON SITE BURIAL
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ I. IN STU CHEMICAL TREATMENT
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ J. IN STU BIOLOGICAL TREATMENT
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ K. IN STU PHYSICAL TREATMENT
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ L. ENCAPSULATION
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ M. EMERGENCY WASTE TREATMENT
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ N. CUTOFF WALLS
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ P. CUTOFF TRENCHES/SUMP
04 DESCRIPTION

02 DATE _____

03 AGENCY _____

01 ☐ Q. SUBSURFACE CUTOFF WALL
04 DESCRIPTION

02 DATE _____

03 AGENCY _____



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

MD 030212799

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ S. CAPPING/COVERING
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ T. BULK TANKAGE REPAIRED
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ U. GROUT CURTAIN CONSTRUCTED
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ V. BOTTOM SEALED
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ W. GAS CONTROL
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ X. FIRE CONTROL
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ Y. LEACHATE TREATMENT
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ Z. AREA EVACUATED
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ 1. ACCESS TO SITE RESTRICTED
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☐ 2. POPULATION RELOCATED
04 DESCRIPTION

02 DATE

03 AGENCY

01 ☒ 3. OTHER REMEDIAL ACTIVITIES
04 DESCRIPTION

02 DATE

03 AGENCY

Railroad is monitoring seepage into railroad cut along western border. Plan to sample seepage and groundwater observation wells.

III SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, reports)

DEC ENUR. REG FILE (BOF.) (P. EISMAN)



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

NV 030212799

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☒ YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

STATE DEC REQUESTED THAT THE SITE BE COVERED & CLOSED
IN 1976

III. SOURCES OF INFORMATION (See specific references, e.g., state files, sample analysis, reports)

DEC FILE

5.3 SITE INSPECTION SUMMARY

On 12 May 1983, Mr. William Going and Mr. Chuck Houlik, representatives of Ecological Analysts, Inc., visited the Norton Lab site. The small (1-acre), inactive landfill is located at approximately 520 Mill Street in Lockport, New York. More specifically, it is situated about 100 feet south of Mill Street and 20 feet east of the top of the slope of the Somerset Railroad Corporation cut. Land use surrounding the site is generally industrial (both active and vacant properties). There are residential areas to the north and northeast, at a distance of about 1/4-1/2 mile. The small landfill is situated out in an open field just off Mill Street. The landfill has been covered and is revegetated (sumac, teasel, grasses), so that little sign is left of past landfilling practices. Some molded plastic and resinous parts (wastes of some manufacturing process) observed among the weeds and grasses were the only indication of the previous landfill. There are no fences or gates to limit access to the property. Several wells have been placed in or near the landfill (associated with railroad construction). Shallow ground water (no discoloration) was observed seeping out the side of the railroad cut from the vicinity of the old landfill. Photographs were taken from different vantage points on the site.

6. SITE HISTORY

The Norton Labs site is an inactive landfill on the south side of Mill Street in Lockport, New York. The site was ordered closed in 1976 by the NYSDEC (Attachment 6-1) after having been in operation since at least 1965 (Attachment 6-2). Wastes disposed on site have been listed as 800-900 pounds per day of solid waste plastic and defective plastic parts, and 250 gallons per year of waste lubricating and hydraulic oil (Attachments 6-1 and 6-3). The oils were reportedly spilled out onto the ground or landfilled in small containers.

In August 1982, excavation by the Somerset Railroad, on the western border of the site, resulted in two buried drums being punctured. The drums emitted an oily, green substance which had a strong disinfectant-type odor. The contents of the drums were examined by RECRA Research, Inc. The spilled material contaminated the surrounding soil, whereby necessitating the removal and disposal of 15 cubic yards of soil. The soil was tested before removal and found to contain 6.5 mg/Kg PCBs (Attachment 6-4). The drums on the east bank of the railroad cut were recovered.

The Somerset Railroad, current owner of the site, is scheduled to complete a sampling and monitoring program of seepage into the eastern side of the railroad cut by October 1983 pursuant to their application for a freshwater wetlands permit for drainage discharge from the railroad cut. After the completion of laboratory analyses, a hydrogeologic report will be prepared; in addition, mitigation measures, if necessary, will be recommended (Attachment 6-5).

NAME:

NORTON LABS (DEC No. 932029)

LOCATION:

This site is a one acre inactive landfill located in Lockport, NY 100 feet south of Mill Street and 20 feet east of the top of slope of the Somerset Railroad Corporation cut.

A site sketch is attached.

OWNERSHIP:

This property was owned by Norton Labs, Inc. at the time of disposal. The current owner was not determined.

HISTORY:

Norton Labs operated plants in Lockport until bankruptcy forced their closing in 1982. The original plant was located at 520 Mill Street and was later moved to 521 Mill Street. Norton manufactured plastic parts from polyester resin with glass strands and sisal fillers and from phenolic resin with wood flour filler. A 1977 estimate of waste generation was 1000 pounds per day, of which 80 to 90% was associated with the polyester based plastics and the remainder with the phenolic based plastics. The primary wastes were solid waste plastic and defective plastic parts. The Interagency Task Force report states that 250 gallons of waste oil per year were dumped here. The source of this information is not known. ? See Attachment 6-3

Until the mid 1970's, Norton Labs operated a disposal area south of Mill Street. After that time, most of the wastes were either recycled or hauled off-site for disposal. Some inert plastic material may have been disposed of west of the parking area west of the plant building at 521 Mill St. As the company is now defunct, Norton personnel were not available to confirm this information.

The site south of Mill Street was covered with soil in 1976 at the request of this department. This area was not subsequently used for disposal although an adjacent area was used for dumping of demolition debris by McGonigle and Hilger Roofing of 520 Mill Street from 1978 to 1982.

In August 1982, Lane Construction, Inc. inadvertently uncovered a portion of the landfill during construction of the Somerset Railroad. The railroad cut is adjacent to the landfill. A steel drum was punctured, emitting a solvent-like odor. Also, a thick green liquid seeped to the surface nearby which had an odor similar to a non-solvent degreaser (Lysol). The majority of the fill appeared to be plastic waste and small plastic parts (distributor rotors, door knobs, etc). Fifteen cubic yards of contaminated earth were removed for secure landfill disposal (although analysis found no hazardous characteristics). The Railroad agreed to cover the remaining exposed wastes.

Once completed, the Somerset Railroad plans to monitor any seepage into the railroad cut and the water collected in the associated drainage system.

RESULTS OF PREVIOUS SAMPLING:

Samples were taken by SCA Chemical Services of the waste materials prior to disposal of material uncovered in August 1982. The analysis was unable to identify the components of the wastes. The material was found to exhibit none of the characteristics of a hazardous waste (corrosivity, ignitability, reactivity and EP toxicity) and was considered non-hazardous by the testing firm (Recra Research).

EXAMINATION OF AERIAL PHOTOGRAPHY:

Aerial photography provided no additional information.

SOILS/GEOLOGY:

Soils in this area are characteristically shallow and stony. It is possible that some of the soil may have been removed prior to landfilling.

The U. S. Soil Conservation Service classifies this area as "Rockland - nearly level" in Soil Survey of Niagara County. This classification indicates that 70 to 80% of the surface is covered with stones or rock outcrops. Surrounding areas are designated "Rockland - steep" or "Quarry".

Vegetation is sparse grass and scrub brush. Rock outcrops cause many bald areas.

Bedrock is of the Clinton and Albion groups of various shales and sandstones to over 100 feet in depth. According to Johnston (1964) these units are capable of transmitting groundwater, primary through joints and fractures, but recharge is limited by the nearly impervious Rochester shale unit overlying most of the formation. Wells in these formations generally produce low yields (2 to 3 gpm). Water quality is generally poor because of hardness and salinity.

GROUNDWATER:

Boring records from nearby sites indicate that very little free water is available in the bedrock and that overburden wells are intermittent.

The cuts to be made (up to 26 feet) adjacent to the site for the railroad ROW are likely to collect any groundwater from the site and railroad drainage would discharge this water to Eighteen Mile Creek. Therefore, this cut could act as a conduit for leachate from this site, if leachate is generated.

There are no known drinking water wells in this area and no known uses of groundwater.

SURFACE WATER:

Eighteen-Mile Creek is located 600 feet south of the disposal area at an elevation 110 feet below the landfill. A very steep embankment (nearly vertical) over 100 feet high begins at the creek bank. It is obvious that runoff from the landfill area enters the creek.

SURFACE WATER (continued)

It is noted that Eighteen Mile Creek receives discharges from several industries and the Lockport Wastewater Treatment Plant. It would appear that the effect of the Norton site, if any, on water quality would be small by comparison.

Eighteen-Mile Creek enters Lake Ontario twelve miles downstream at Olcott. There are no drinking water intakes downstream.

There are no wetlands near the site and the site is not in a 100-year flood plain.

AIR/FIRE/EXPLOSION:

No problems with air emissions, fire or explosion potential are likely as long as the wastes remain covered. When uncovered in 1982, solvent odors were emitted. The flashpoint of a sample of waste material was greater than 160° F. No methane generation is anticipated.

The site is over 1000 feet from any residence. The area to the south and east is industrial, the area to the west is idle and the area to the north and northwest are vacant industrial (former Norton Plant) within 1000 feet and residential beyond 1000 feet.

DIRECT CONTACT:

The materials buried here are not known to be toxic or irritating. If the wastes remain covered, the potential for direct contact is slight. In addition, public use of this area is minimal.

SUMMARY:

The majority of wastes disposed of at this site are waste plastics which are essentially inert and non-toxic. Small quantities of other unknown wastes may be present. A potential pathway for migration exists in the adjacent railroad cut.

RECOMMENDATIONS:

The rock cut and side slopes of the railroad cut should be inspected at least annually for visible seepage from the landfill. A follow-up inspection should be made upon the completion of the railroad construction to determine whether or not the landfill is adequately closed. No sampling or further investigation is considered necessary unless seepage or other problems are found. The Somerset Railroad Company will reportedly monitor the drainage water prior to discharge to Eighteen-Mile Creek.



NIAGARA COUNTY HEALTH DEPARTMENT

525 BEWLEY BUILDING

LOCKPORT, NEW YORK

TEL. 434-2835

DUDLEY A. HILL, M.D.
COMMISSIONER

JERAULD A. CAMPBELL, M.D.
DEPUTY COMMISSIONER

DIVISION OF
ENVIRONMENTAL HEALTH SERVICES

EUGENE F. SEEBALD, P.E.
ASSISTANT COMMISSIONER

May 7, 1965

RECEIVED

MAY 10 1965

N. Y. STATE DEPT. OF HEALTH
BUFFALO REGIONAL OFFICE

Norton Laboratories, Inc.
Mill Street
Lockport, New York

Attention: Mr. Clinton Fleming
President

Dear Sir:

Re: Conference Refuse Disposal

Herewith I am summarizing the details covered in our conference on May 6, 1965.

Present at the conference were yourself, Mayor Rollin Grant, City of Lockport, three members of your firm and the writer.

The problem of Norton Laboratories with respect to the disposal of solid waste was discussed and the following conclusions were reached after conference and inspection of your refuse disposal site:

1. There is no objection to the final disposal of fractionated plastic parts on the site being used for fill after compaction and covering.
2. The refuse from the domestic use of cafeteria and toilet room space will be disposed of in a sanitary manner either by incineration on the site or by being transported to an approved refuse disposal area.
3. Immediate investigation of the feasibility of salvaging waste paper products from your operation will be made, leading to an early solution to this problem.
4. A completely enclosed incinerator feasibility study will be investigated to dispose of waste paper products which do not lend themselves to salvage.
5. The disposal site of the company will be barricaded from access through the public thoroughfare adjacent to the plant.
6. Scavengers seeking to obtain salvage from the plastic refuse will be prohibited from the site.
7. A new access road from the plant property will be constructed to isolate the disposal site from public use.

It is requested that you advise this office by May 24th of your progress in complying with the previously set forth schedule of corrections.

Cont'd.

Initial Contact 11/15/76 by J.E.J.
 Appointment Made 11/15/76 by J.E.J.
 Interview or Phone Visit 11/22/76 by J.E.J.
 Follow-up 1/1 by J.E.J.
 Form Completed 11/22/76 by J.E.J.
 Comments:

Company Name Norton Laboratories, Inc.
 Address 521 Mill St. Lockport, N.Y.
14094
 County Niagara Phone (716)-433-6751
 SIC Codes 1. 3079 3.
 2. 4.

ten tank residue
 sent to waste

legal waste

dumped out back

on site

New York State Industrial Waste Survey
 Department of Environmental Conservation
 Division of Solid Waste Management

50 Wolf Road, Albany, N.Y. 12233 Telephone: (518) 457-6605

General Information

1. Company Name Norton Laboratories
 Mailing Address 521 Mill St., Lockport, N.Y. 14094
 Street City State Zip

Plant Location ☒ Same as above

Street City State Zip

2. If Subsidiary, Name of Parent Company Auburn Plastics Inc.

3. Individual Responsible for Plant Operations John E. Iannetti

Name

President

Title

(716)-433-6751

Phone

4. Individual Providing Information Bob McKim

Name

Plant Manager

Title

Phone

5. Department of Environmental Conservation Interviewer John E. Iannetti

6. Standard Industrial Classification (SIC) Codes for Principal Products

SIC Code
(4 Digit)

Approximate % of
☒ Production ☐ Value Added

Group Name	SIC Code (4 Digit)	Approximate % of Production	Approximate % of Value Added
a. <u>Plastics</u>	<u>3079</u>	<u>100</u>	<u>100</u>
b. <u></u>	<u></u>	<u></u>	<u></u>
c. <u></u>	<u></u>	<u></u>	<u></u>
d. <u></u>	<u></u>	<u></u>	<u></u>

7. Processes Used at Plant

a. mixing & blending

b.

c.

d.

e.

8. Products

a. handles for pots & pans

b. plastic containers

c. plastic bags

d.

e.

Chemicals used in manufacturing or produced as products:

- a. liquid resins
b. styrenes
c. colored pigments
d. carbonates
e. polymerizer
- f. aluminum hydrates
g. sisal (cross linker)
h. tube & hydraulic fills
i. catalyst system \rightarrow benzoyl peroxide
j.

On Site Waste Water Treatment / / Yes / / No

1 On Site Waste Water Treatment by July 1977 / Yes / ~~No~~

c. On Site Waste Water Treatment by July 1983 / Yes ☒ No

Industrial Sewer Discharge ☒ Yes ☐ No

Name of Sewage
Treatment Plan

City of Lockport

SPDES No. NPDES No.

a. Air Pollution Control Devices ☒ Yes ☐ No Types cyclone & dust
collectors

To Be Built / / Yes / / No by / /

c. Air 100 Emission Point Registration Numbers

a. Number of manufacturing employees 200 b. Manufacturing Floor Space sq.ft.

Attach a plat or sketch of the facility showing the location of on-site process waste storage (if available).

Attach flow diagrams of chemical processes including waste flow outputs (if available).

house waste treatment capabilities: No

Is there a currently used or abandoned landfill, dump or lagoon on plant property? / Yes / ✓ No

Industrial wastes produced or expected to be produced by plant.

- 3) degreaser waste → sewer
residue from tank cleaners
waste oil
lab waste
shavings & dust collector waste

Comments: Water is just dumped out before plant

tact

11/10/76 by U.S. EPA
11/10/76 hu U.S. EPA

Company Name Norton Laboratories, Inc.
100 Kent N.Y.

pg. 3 of 12

Waste Characterization and Management Practice
(Use separate form for each waste stream)

1. Waste Stream No. 1 (from Form I, Number 17)
2. Description of process producing waste cleaning of molds with
raw material styrene
3. Brief characterization of waste slurry
4. Time period for which data are representative current to _____
5. a. Annual waste production 220 ☐ tons/yr. ☒ gal./yr.
b. Daily waste production _____ ☐ tons/day ☐ gal./day
c. Frequency of waste production: ☐ seasonal ☒ occasional ☐ continual
☐ other (specify) _____

6. Waste Composition

a. Average percent solids _____% b. pH range _____ to _____

c. Physical state: ☐ liquid, ☒ slurry, ☐ sludge, ☐ solid,
☐ other (specify) _____

d. Component	Average Concentration	
	<input type="checkbox"/> wet weight	<input type="checkbox"/> dry weight
1. <u>styrene</u>	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	
2. <u>H₂O</u>	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	
3. _____	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	
4. _____	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	
5. _____	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	
6. _____	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	
7. _____	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	
8. _____	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	
9. _____	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	
10. _____	<input type="checkbox"/> wt.% <input type="checkbox"/> ppm	

Contact

11/15/11 by 11/15/11

Company Name

Norton Laboratories, Inc.

pg. 4 of 12

e. Analysis of composition is ☐ theoretical ☐ laboratory ☒ estimate
(attach copy of laboratory analysis if available)

f. Projected ☐ increase, ☐ decrease in volume from base year: _____ % by July 1977;
_____ % by July 1983.

g. Hazardous properties of waste: ☐ flammable ☐ toxic ☐ reactive ☐ explosive
☐ corrosive ☐ other (specify) _____

7. On Site Storage

a. Method: ☐ drum, ☐ roll-off container, ☐ tank, ☐ lagoon, ☐ other (specify) _____

b. Typical length of time waste stored _____ ☐ days, ☐ weeks, ☐ months

c. Typical volume of waste stored _____ ☐ tons, ☐ gallons

d. Is storage site diked? ☐ Yes ☐ No

e. Surface drainage collection ☐ Yes ☐ No

8. Transportation

a. Waste hauled off site by ☐ you ☐ others

b. Name of waste hauler _____

Address

Street

City

State

Zip Code

Phone

9. Treatment and Disposal

a. Treatment or disposal: ☐ on site ☒ off site

b. Waste is ☐ reclaimed ☐ treated ☐ land disposed ☐ incinerated
☒ other (specify) discharged to sewer

c. Off site facility receiving waste

Name of Facility

City of Lockport Treatment Facility

Facility Operator

Facility Location

Street

City

State

Zip Code

Phone

11/15/19 by 17952

Company Name: Al-Lahiri Trg.

pg. 5 of 12

(Use separate form for each waste stream)

1. Waste Stream No. 2 (from Form I, Number 17)
2. Description of process producing waste cleanup of mixing & blending tanks
3. Brief characterization of waste sludge
4. Time period for which data are representative current to _____
5. a. Annual waste production 2.6 14 tons/yr. ☐ gal./yr.
- b. Daily waste production 20 16/day 14 tons/yr. ☐ gal./yr.
- c. Frequency of waste production: ☐ seasonal ☐ occasional ☒ continual
- ☐ other (specify) _____

6. Waste Composition

- a. Average percent solids _____ % b. pH range _____ to _____
- c. Physical state: ☐ liquid, ☐ slurry, ☒ sludge, ☐ solid,
☐ other (specify) _____

d. Component	Average Concentration	/ / wet weight	/ / dry weight
1. _____	_____	/ / wt. %	/ / ppm
2. _____	_____	/ / wt. %	/ / ppm
3. _____	_____	/ / wt. %	/ / ppm
4. _____	_____	/ / wt. %	/ / ppm
5. _____	_____	/ / wt. %	/ / ppm
6. _____	_____	/ / wt. %	/ / ppm
7. _____	_____	/ / wt. %	/ / ppm
8. _____	_____	/ / wt. %	/ / ppm
9. _____	_____	/ / wt. %	/ / ppm
10. _____	_____	/ / wt. %	/ / ppm

Contact

11/15/82 by 11/15/82

11/15/82 by 11/15/82

pg. 6 of 12

e. Analysis of composition is ☐ theoretical ☐ laboratory ☒ estimate
(attach copy of laboratory analysis if available)

f. Projected ☐ increase, ☐ decrease in volume from base year: _____ % by July 1977;
_____ % by July 1983.

g. Hazardous properties of waste: ☐ flammable ☐ toxic ☐ reactive ☐ explosive
☐ corrosive ☐ other (specify) _____

3. On Site Storage

a. Method: ☒ drum, ☐ roll-off container, ☐ tank, ☐ lagoon, ☐ other (specify) _____

b. Typical length of time waste stored 1 ☐ days, ☒ weeks, ☐ months

c. Typical volume of waste stored 100 ☒ tons, ☐ gallons

d. Is storage site diked? ☐ Yes ☒ No

e. Surface drainage collection ☐ Yes ☒ No

9. Transportation

a. Waste hauled off site by ☐ you ☒ others

b. Name of waste hauler Modern Disposal

Address

Street

City

State

Zip Code

Phone

10. Treatment and Disposal

a. Treatment or disposal: ☐ on site ☒ off site

b. Waste is ☐ reclaimed ☐ treated ☒ land disposed ☐ incinerated
☐ other (specify) _____

c. Off site facility receiving waste

Name of Facility City of Lockport Landfill

Facility Operator _____

Facility Location _____

Street

City

State

Zip Code

Phone

Company Name Norton Laboratories, Inc.

Pg. 7 of 12

Waste Characterization and Management Practice

(Use separate form for each waste stream)

1. Waste Stream No. 3 (from Form I, Number 17)
2. Description of process producing waste lubrication of machinery
3. Brief characterization of waste lubricating & hydraulic oil waste
4. Time period for which data are representative current to _____
5. a. Annual waste production 250 ☐ tons/yr. ☒ gal./yr.
b. Daily waste production _____ ☐ tons/yr. ☐ gal./yr.
c. Frequency of waste production: ☐ seasonal ☒ occasional ☐ continual
☐ other (specify) _____
6. Waste Composition
- a. Average percent solids _____% b. pH range _____ to _____
- c. Physical state: ☒ liquid, ☐ slurry, ☐ sludge, ☐ solid,
☐ other (specify) _____
- | d. Component | Average Concentration | <input type="checkbox"/> wet weight | <input type="checkbox"/> dry weight |
|--------------|-----------------------|-------------------------------------|-------------------------------------|
| 1. _____ | _____ | <input type="checkbox"/> wt.% | <input type="checkbox"/> ppm |
| 2. _____ | _____ | <input type="checkbox"/> wt.% | <input type="checkbox"/> ppm |
| 3. _____ | _____ | <input type="checkbox"/> wt.% | <input type="checkbox"/> ppm |
| 4. _____ | _____ | <input type="checkbox"/> wt.% | <input type="checkbox"/> ppm |
| 5. _____ | _____ | <input type="checkbox"/> wt.% | <input type="checkbox"/> ppm |
| 6. _____ | _____ | <input type="checkbox"/> wt.% | <input type="checkbox"/> ppm |
| 7. _____ | _____ | <input type="checkbox"/> wt.% | <input type="checkbox"/> ppm |
| 8. _____ | _____ | <input type="checkbox"/> wt.% | <input type="checkbox"/> ppm |
| 9. _____ | _____ | <input type="checkbox"/> wt.% | <input type="checkbox"/> ppm |

e. Analysis of composition is ☐theoretical ☐laboratory ☒estimate
(attach copy of laboratory analysis if available)

f. Projected ☐increase, ☐decrease in volume from base year: _____% by July 1977;
_____ % by July 1983.

g. Hazardous properties of waste: ☒flammable ☐toxic ☐reactive ☐explosive
☐corrosive ☐other (specify) _____

3. On Site Storage

a. Method: ☐drum, ☐roll-off container, ☐tank, ☐lagoon, ☒other (specify) small containers

b. Typical length of time waste stored _____ ☐days, ☐weeks, ☐months

c. Typical volume of waste stored _____ ☐tons, ☐gallons

d. Is storage site diked? ☐Yes ☐No

e. Surface drainage collection ☐Yes ☐No

9. Transportation

a. Waste hauled off site by ☐you ☐others

b. Name of waste hauler _____

Address

Street

City

State

Zip Code

Phone

10. Treatment and Disposal

a. Treatment or disposal: ☒on site ☐off site

b. Waste is ☐reclaimed ☐treated ☒land disposed ☐incinerated

☐other (specify) just dumped on land out back (no specified dumping area)

c. Off site facility receiving waste

Name of Facility _____

Facility Operator _____

Facility Location _____

Street

City

State

Zip Code

Phone

Waste Characterization and Management Practice
(Use separate form for each waste stream)

1. Waste Stream No. 4 (from Form I, Number 17)

2. Description of process producing waste laboratory analyses

3. Brief characterization of waste miscellaneous lab waste

4. Time period for which data are representative current to _____

5. a. Annual waste production 20 ☐ tons/yr. ☒ gal./yr.

b. Daily waste production _____ ☐ tons/yr. ☐ gal./yr.

c. Frequency of waste production: ☐ seasonal ☒ occasional ☐ continual
☐ other (specify) _____

6. Waste Composition

a. Average percent solids _____ b. pH range _____ to _____

c. Physical state: ☒ liquid, ☐ slurry, ☐ sludge, ☒ solid,
☐ other (specify) _____

d. Component	Average Concentration	<input type="checkbox"/> wet weight	<input type="checkbox"/> dry weight
1. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
2. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
3. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
4. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
5. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
6. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
7. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
8. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
9. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
10. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm

e. Analysis of composition is ☐ theoretical ☐ laboratory ☐ estimate
(attach copy of laboratory analysis if available)

f. Projected ☐ increase, ☐ decrease in volume from base year: _____% by July 1977;
_____% by July 1983.

g. Hazardous properties of waste: ☐ flammable ☐ toxic ☐ reactive ☐ explosive
☐ corrosive ☐ other (specify) _____

8. On Site Storage

a. Method: ☐ drum, ☐ roll-off container, ☐ tank, ☐ lagoon, ☒ other (specify) small container

b. Typical length of time waste stored _____ ☐ days, ☐ weeks, ☐ months

c. Typical volume of waste stored _____ ☐ tons, ☐ gallons

d. Is storage site diked? ☐ Yes ☐ No

e. Surface drainage collection ☐ Yes ☐ No

9. Transportation

a. Waste hauled off site by ☐ you ☒ others

b. Name of waste hauler Waste Management

Address

Street

City

State

Zip Code

Phone

10. Treatment and Disposal

a. Treatment or disposal: ☐ on site ☒ off site

b. Waste is ☐ reclaimed ☐ treated ☒ and disposed ☐ incinerated
☐ other (specify) _____

c. Off site facility receiving waste

Name of Facility City of Lowell Landfill

Facility Operator _____

Facility Location _____

Street

City

State

Zip Code

Phone

Waste Characterization and Management Practice
(Use separate form for each waste stream)

1. Waste Stream No. 5 (from Form I, Number 17)
2. Description of process producing waste process cyclones & dust collectors
3. Brief characterization of waste dust in powder-type form
4. Time period for which data are representative current to _____
5. a. Annual waste production 2.5 ☒ tons/yr. ☐ gal./yr.
b. Daily waste production 20 ^{16/ton} ☒ tons/yr. ☐ gal./yr.
c. Frequency of waste production: ☐ seasonal ☐ occasional ☒ continual
☐ other (specify) _____
6. Waste Composition
 - a. Average percent solids _____ % b. pH range _____ to _____
 - c. Physical state: ☐ liquid, ☐ slurry, ☐ sludge, ☒ solid,
☐ other (specify) _____
 - d. Component

	Average Concentration	<input type="checkbox"/> wet weight	<input type="checkbox"/> dry weight
1. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
2. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
3. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
4. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
5. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
6. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
7. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
8. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
9. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm
10. _____	_____	<input type="checkbox"/> wt.%	<input type="checkbox"/> ppm

e. Analysis of composition is ☐theoretical ☐laboratory ☐estimate
(attach copy of laboratory analysis if available)

f. Projected ☐increase, ☐decrease in volume from base year: _____% by July 1977;
_____ % by July 1983.

g. Hazardous properties of waste: ☐flammable ☐toxic ☐reactive ☐explosive
☐corrosive ☒other (specify) NUISANCE
odor

3. On Site Storage

a. Method: ☒drum, ☐roll-off container, ☐tank, ☐lagoon, ☐other(specify) _____

b. Typical length of time waste stored 2 ☐days, ☐weeks, ☒months

c. Typical volume of waste stored 825 ¹⁶⁵ ☒tons, ☐gallons

d. Is storage site diked? ☐Yes ☐No

e. Surface drainage collection ☐Yes ☐No

9. Transportation

a. Waste hauled off site by ☐you ☒others

b. Name of waste hauler Modern Disposal

Address

Street _____ City _____
State _____ Zip Code _____ Phone _____

10. Treatment and Disposal

a. Treatment or disposal: ☐on site ☒off site

b. Waste is ☐reclaimed ☐treated ☒land disposed ☐incinerated
☐other (specify) _____

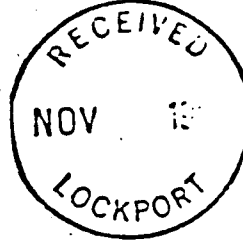
c. Off site facility receiving waste

Name of Facility City of Lockport Landfill

Facility Operator _____

Facility Location _____

Street _____ City _____
State _____ Zip Code _____ Phone _____



1/11

Model City Office

TO: Dick Shanley

FROM: Paul Letki *PL*

SUBJECT: Response to information requested by NYS E&G, Bechtel, Lane Construction and Woodward-Clyde

DATE: November 8, 1982



Ref: NYS E&G 3074-A

Introduction: The Lane Construction Corporation requested SCA Chemical Services, Inc. at Model City (SCA/MC) to collect samples from a construction site in Lockport, NY on 8/27/82. The samples were collected, evaluated and approved for disposal at SCA/MC. The contaminated soil was excavated, transported and disposed of in a secure landfill at SCA/MC on 9/2/82.

Sampling: Mr. Richard Shanley, a Technical Sales Representative of SCA/MC, responded to a request from Lane Construction to assess a potential problem on 8/27/82. Mr. Shanley arrived at a construction site located on the south side of Mill St. in Lockport, NY on 8/27/82 at approximately 1:30 p.m. Mr. Wayne Sherman directed Mr. Shanley to a location where two leaking drums were found. A green, oily substance had leaked from the drums and contaminated the soil in the immediate vicinity. Mr. Shanley collected three contaminated soil samples in hexane rinsed glass bottles. Mr. Wayne Sherman witnessed the sampling. The samples were tagged and immediately transported back to SCA/MC's lab for evaluation.

Evaluation: Upon arrival at SCA/MC (4:00 p.m. on 8/27/82) the samples were immediately logged (1) in to initiate the evaluation/process in case mobilization for emergency response was determined. Below are the physical/chemical results of the collected samples.

Physical Appearance:	Opaque brown sludge/solid, oily
Viscosity:	High
Specific Gravity:	1.6
Odor:	Lysol like
Flammability:	Does not ignite
pH:	8-9 (aqueous)
Reactivity:	Does not react with water
Solids:	45.2%
Chemical:	6.5 mg/kg PCB as 1242, dry weight

All three samples were similar in the basic physical characteristics, therefore, a single composite was made for chemical analysis. Since the sample was not flammable, corrosive or water reactive, an emergency response was not deemed necessary. Due to their oily consistency, the samples were sent out to an independent testing lab for PCB analysis.

Footnote: (1) Initiation of the following internal documents
(a) Form SCA - Chem - 0002-1, 2 and 3
(b) Form SCA (Customer)

211

Dick Shanley
November 8, 1982

-2-

Attached please find:

Figure 1 - Chain of Custody

Figure 2 - Acts Testing Lab, Inc. Technical Report.

Note: Only the data under "Results: c) Sludge Sample" is
pertinent to the samples collected for this project.

Figure 3 - Gas Chromatograph Conditions/Methodology

Figure 4 - Chromatographic Scans of Standard and Sample

The results of the testing were inconclusive as to the exact chemical component makeup of the contaminated soil samples. No hazard could be associated with the contaminated soil samples based on the testing performed.

Excavation: In response to Lane Construction's request to remove the contaminated soil, SCA mobilized and arrived at the construction site on 9/2/82. Mr. Ralph Love, (Special Project Supervisor, SCA/MC), supervised the operation. Approximately 15 cubic yards of material were removed including the empty drums above the contaminated zone.

Using a backhoe and front end loader, the contaminated soil was excavated and loaded onto a dump trailer lined with a piece of plastic.

Transportation/NYS RCRA Manifest: The dump trailer once filled proceeded to SCA/MC for disposal of the contaminated soil. Attached please find a copy of the State of New York, Hazardous Waste Manifest document no. NY 170408 7 (figure 5) completed and signed by Mr. G. Edwards of SRC.

The EPA Hazard Code and EPA waste type columns on the HWM were improperly filled out. The waste was not determined to be an EPA/NYS DEC RCRA hazardous material by the analytical tests performed at SCA/MC's lab. This material could have been shipped with only a Bill of Lading, without the HWM.

Disposal/Internal Manifesting: The truck with manifest document no. NY 170408 7 and W.O. # 76278 arrived at SCA/MC on 9/2/82. Attached please find a copy of the Shipping and Receiving Record (Figure 6) which documents the weight in. A copy of the Receiving Location Report (Figure 7) which documents the laboratory approval for disposal in Secure Landfill #10 Cell III and the landfill foreman's certification of disposal and exact grid location, H-7-II in SLF 10 III, is also attached.

PL/km
Enc.

ACTS TESTING LABS, INC.

3900 Broadway • Buffalo, N.Y. 14227-1192 • (716) 684-3300

TECHNICAL REPORT

September 9, 1982

Mr. Paul Letki
SCA Chemical Services



OBJECT:

Analysis of two oil samples for lead, mercury, and PCB's.
Analysis of two water samples and one soil sample for PCBs.
The samples were received on September 1, 1982.

RESULTS:

A) Oil Samples

	August Fuel Type "C" Comp. Oil	August Fuel Type "E" Comp. Oil
Lead	LT 1.0	4.0
Mercury	LT 0.08	LT 0.08
PCB's	11.7	6,140

LT = Less Than

Metals are reported in parts per million (micrograms per gram).

PCB's are reported in parts per million as Aroclor 1260.

B) Water Samples

7-IV Como. - 10.2 milligrams per liter (mg/l) PCB's as Aroclor 1242.

7-Como. - 0.003 milligrams per liter (mg/l) PCB's as Aroclor 1260.

C) Sludge Sample - Comp. Lockport Clean-Up Sludge

After drying to constant weight the sample was found to contain 45.2% solids.

Dry Weight Basis - Sample contains 6.5 parts per million PCB's as Aroclor 1242.

"As Received" Basis - Sample contains 2.9 parts per million PCB's as Aroclor 1242.

ACTS TESTING LABS, INC.

Mr. Paul Letki
SCA Chemical Services

September 9, 1982
Page Two

EXPERIMENTAL:

Metals were determined using Atomic Absorption Spectroscopy.

PCB's were determined on a Varian Model 3740 Gas Chromatograph equipped with electron capture detector. U.S. Environmental Protection Agency approved procedures were used in the analysis.

ACTS TESTING LABS, INC.

Linda Franzek

Linda Franzek
Analyst

ACTS TESTING LABS, INC.

Daniel P. Murtha

Daniel P. Murtha, Ph.D.
Laboratory Director

bam

ACTS TESTING LABS. INC.

6/11

1) Gas Chromatograph Conditions

Instrument = Varian Model 3740

Column = 6 Feet X $\frac{1}{8}$ Inch Glass, Liquid Phase = 1.95%
QF-1+1.5% OV-17, Solid Support = Supelcoport 100/120 mesh

Column Temp = 170°C

Nitrogen Flow = 32 at rotameter, 40 at tank

Detector = Ni⁶³ ECD Detector Temp = 300°C

Injection Port = 250°C

Solvent = Hexane

2) Methodology and Quality Control

Twenty grams of dried sludge was extracted for 24 hours in a Soxhlet Extractor with a one to one acetone/hexane mixture as described in "Determination of PCBs, Pesticides, and Herbicides in Soil, Mud, and Bottom Sediment" - "Test Methods for Evaluating Solid Waste", Physical/Chemical Methods, U.S. EPA, May, 1980. After concentration and cleanup the sample was analyzed by gas chromatography as described above. The sample pattern matches very well with that of the Aroclor 1242 standard. An interference peak at 6.4 minutes in the sample was not used in the calculations.

The 0.1 ppm Aroclor 1242 standard was prepared fresh from a stock 10.0 ppm standard which had been prepared on August 23, 1982.

A Hexane blank was run three injections (roughly thirty minutes) prior to the sample injection and was clean.



GENERATOR NAME *Esmeret, Inc. Corp.* PHONE *716-433-0774* EPA ID NO. *NY16DK19215K15*
New York State Gest. Electric
 SITE ADDRESS *Lockport, N.Y. Mill Street*
 TRANSPORTER NO. 1 *Donawanda Truck* PHONE *716-873-9703* *NY14097164418P11*
 SITE ADDRESS *1140 Military Rd. Buffalo, N.Y. 11217*
 TRANSPORTER NO. 2 _____ PHONE _____

SITE ADDRESS

TREATMENT, STORAGE OR DISPOSAL (TSD) FACILITY PHONE *716-7515231* EPA ID NO. *NY1DK119813K1671*
SCA Chemical Services Inc.
 SITE ADDRESS *1135 Belmont Rd. Model City, N.Y. 14107*

THIS FORM IS NO. _____ OF A TOTAL OF _____ THE FIRST MANIFEST DOCUMENT NO. IS _____ NY _____

PROPER US DOT SHIPPING NAME	US DOT HAZARD CLASS	UN/NA NUMBER	FORM	NET QUANTITY	UNITS	CONTAINERS		EPA HAZ CODE	EPA WASTE TYPE
						NO.	TYPE		
<i>Hazardous Waste</i>	<i>ORME</i>	<i>9189</i>	<i>02</i>	<i>1125</i>	<i>02</i>	<i>1</i>	<i>U3</i>	<i>T</i>	<i>F001</i>
<i>Subst. 1400</i>									

SPECIAL HANDLING INSTRUCTIONS INCLUDING CONTAINER EXEMPTION (i.e. IDENTIFICATION OF ADDITIONAL WASTES INCLUDED IN SHIPMENT OF A NONHAZARDOUS NATURE) DO NOT HAVE TO BE MANIFESTED

Code 3074A

$\mu \approx (2)^{8/11}$

TRAILER NUMBER	240	DISPOSITION	10-111
CUSTOMER	Gene Costa	SPECIFIC GRAVITY	
DATE IN	9/1/82	NET WEIGHT	
WORK ORDER NUMBER	76278	TRAILER MEASUREMENT	
TIME IN	2:00 am	TIME OUT	

[illegible]

ALL drums marked and labeled properly
 Number of drums agree with number on manifest
 Sample okayed by lab

SUPERVISOR INITIAL _____

DATE 12.12.20 TIME

Yes No
Yes No If No contact Plant Manager
Yes No

THURSDAY

SHIPPING RECEIVING RECORD

DATE

62

CUSTOMER	CODE	MATERIAL	WORK ORDER NUMBER	QUANTITY SHIPPED	QUANTITY RECEIVED	DISPOSAL	
use fluids	55-AH	Sulfuric Acid	76228		(518 gals)	Lag 1	
W. and	55-A	Waste Baseoil Sl	76246		65 des	on hold	
PAH	55-BH	Calcium Fluoride	76243		44,540 lbs	SIFG	
W. and		Safety Solvent	31698	1800 gals	—	Outbound	
PAH	788-B	Chlor	75481		23,900/lb	Emg Lag	
W. and	765-C	Paint waste	76251		2 des	on hold	
W. and	765-D	Paint waste	76251		28 des	" "	
W. and	765-E	Paint waste	76251		42 des	" "	
W. and	767-A	Herbicides	76055- 76070		44 des	on hold	
W. and	766-E	Raffinate	76256		(4738 gal)	Lag 2	
W. and	231-E	Thiou Chloride	76183		6 des	on hold	
W. and		Waste Trichloroethylene	31697	65 des	—	Outbound	
W. and	7639A	Spent Pickle Acid	76238		(4462 gal)	Lag 5	
W. and	764-A	PCB Transformer	76247		1 trans	on hold	
W. and	73FM	Gen. River Sludge	76188		22420/lb	SIFG	
W. and	7674-H	Crystalline dust	76278		6020 lbs	W. TL	H-7 II ←
W. and	736N	Unichrome	76255		80 des	on hold	
W. and	788-B	Acid	75482		21,780/lb	Emg Lag	
W. and	31-G	Cement Adhesive	76224		18 des	on hold	
W. and	31-C	Paint Sludge	76224		9 des	" "	

Part 1 - White Copy - SHIPPING & RECEIVING DEPT.
 Part 2 - Canary Copy - R.C.R.A. COORDINATOR
 Part 3 - Pink Copy - ACCOUNTING DEPT.
 Part 4 - Goldenrod Copy - SALES & MARKETING DEPT.

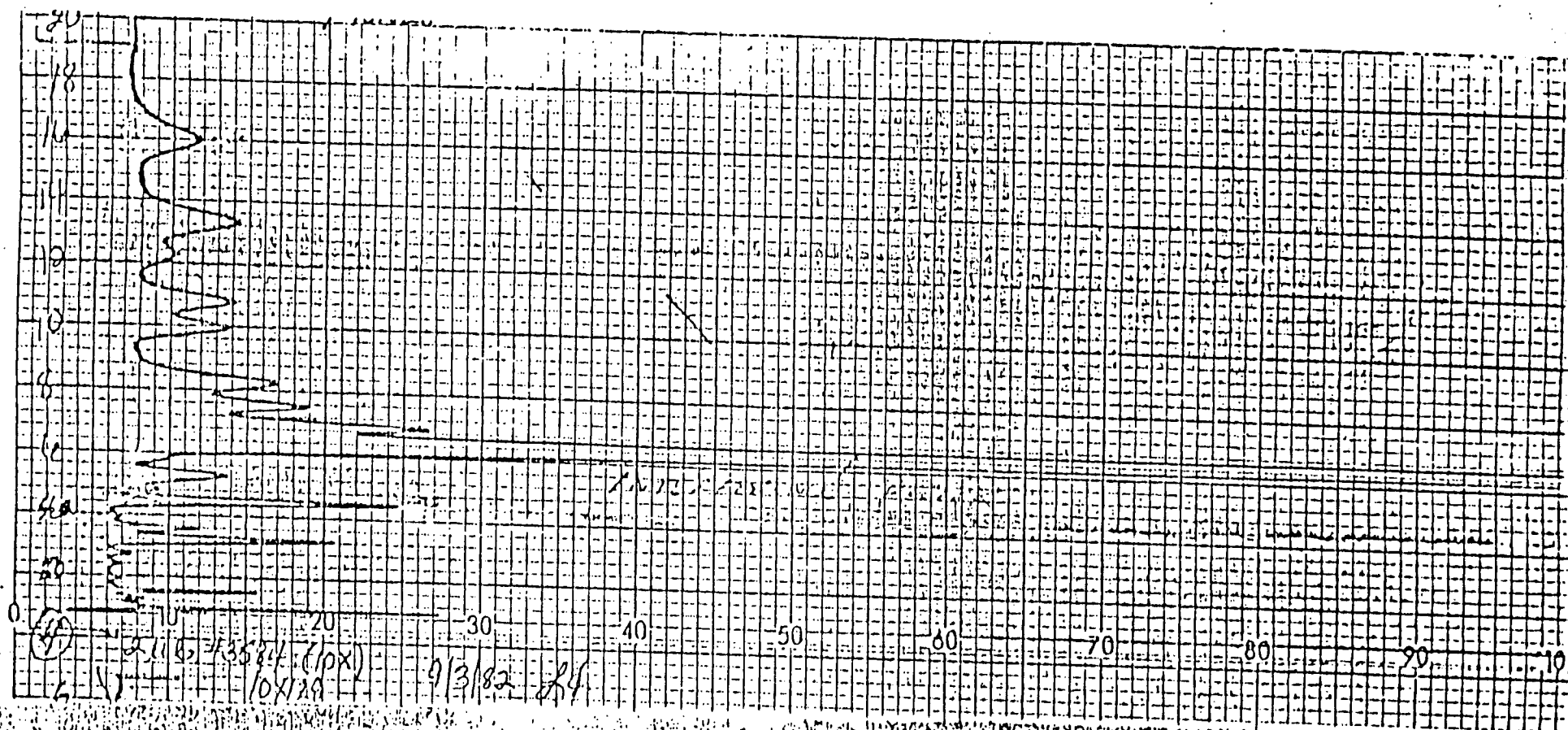
11/6

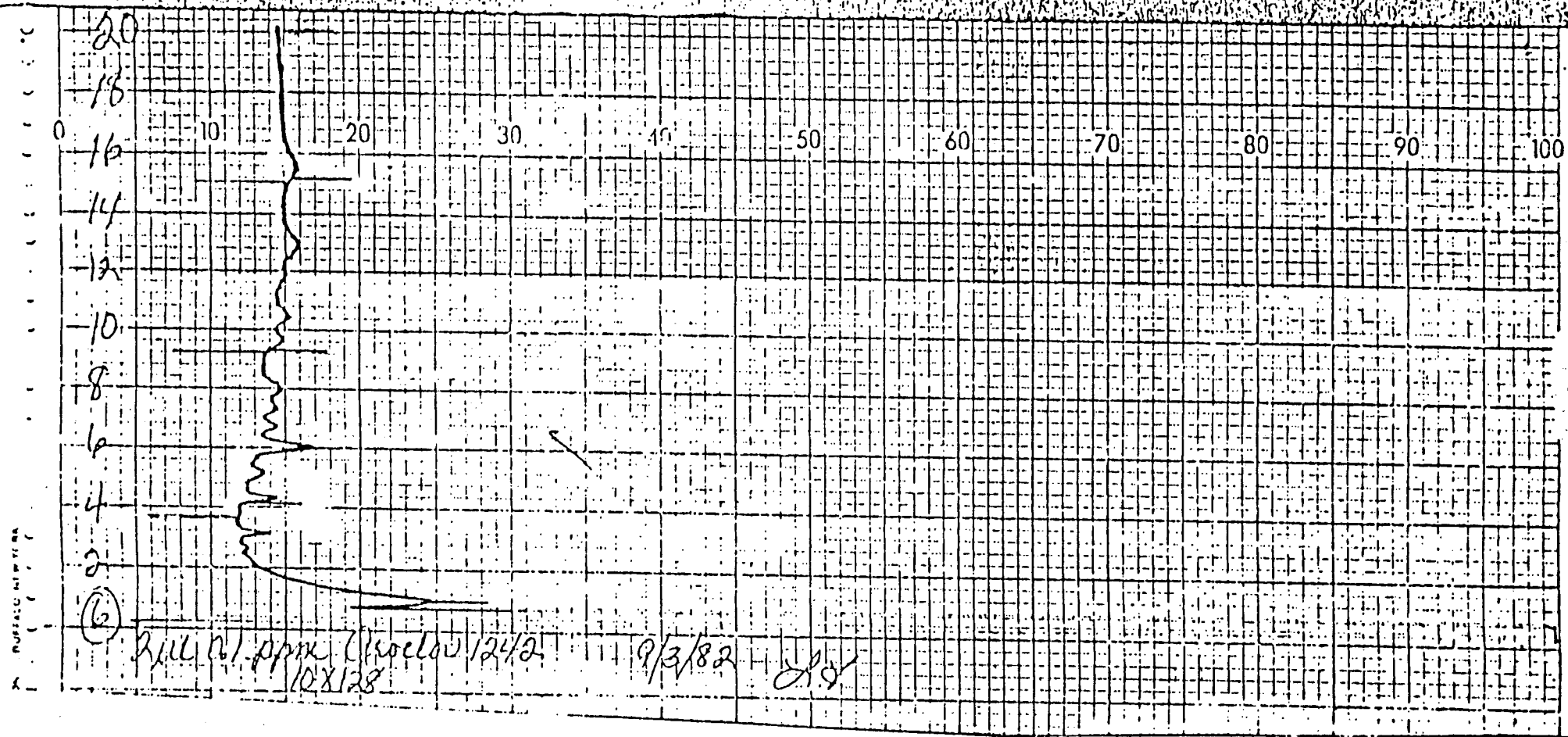
FIGURE (c)

10/11

A.C.T.S. # 3584

LOCKPORT CLEANUP SLUDGE COMPOSITE FROM SCA





0.1 ppm Aroclor 1242 Standard

Schenectady Railroad Corporation

Subsidiary of
New York State Thruway Corporation
100 Parkway East, Albany, New York 12202 (607) 729-2551

May 26, 1983

SPCR-83- 41

File No.: S.480.00

Mr. Steven J. Beloschi
Secretary of the State of
Environmental Conservation
100 Rockefeller Plaza
Buffalo, NY 14260

Subject: Schenectady Railroad Corporation
Albany River Wetlands Permit 90 82-0041

Dear Mr. Beloschi:

Based on a May 24, 1983 field inspection of the Mill Street Cut, several modifications to the June 24, 1982 Water Quality Monitoring Plan were made by Department personnel.

Groundwater monitoring (1980) will not be required to sample each out seepage into the east or west sides of the Mill Street Cut. Based on visual observation that seepage is not flowing in sufficient quantity to permit sample collection. Mr. P. J. [redacted] Field Environmental Coordinator, will periodically monitor both sides of the cut section adjacent to [redacted] through the rock cut.

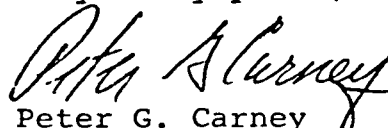
As previously proposed, we will collect samples from the catch basin on the east side of the cut at Sta 51+665 and will measure the discharge during low flow.

Sampling of the seven observation wells and the catch basin will begin in early June. We anticipate that the four rounds of sampling will be completed by late October, 1983. After the laboratory analyses have been completed, a hydrogeologic report will be prepared summarizing the results of the Water Quality Monitoring Program and recommending mitigation measures, if necessary.

242

Should you have any questions concerning these changes,
please contact Mr. Joseph Campisi of my staff.

Very truly yours,


Peter G. Carney
Project Manager

PGC/JSC/es

cc: R. E. Rude
R. Donahoe, Bechtel
J. S. Campisi
J. S. Tygert, DEC-Region 9
P. D. Eismann, DEC-Region 9
A. Hirsch, Woodward-Clyde

7. SITE DATA

7.1 SITE AREA SURFACE FEATURES

The abandoned Norton Lab landfill is located at approximately 520 Mill Street in Lockport, New York. More specifically, it is situated about 100 feet south of Mill Street and 20 feet east of the Somerset Railroad Corporation cut, at an approximate elevation of 425 feet (Attachment 7.1-1). The area is an old field. Vegetation is sumac and teasel and grasses. Terrain is rolling, and the land rises gently to the south and east among limestone outcrops before sloping steeply away to Eighteen Mile Creek (due south) and the railroad (east). The creek bed is some 100 feet below the elevation of the landfill, and the railroad bed is about 26 feet below landfill grade. The railroad cut will eventually discharge any ground water it collects to Eighteen Mile Creek further downstream, so both surface runoff and ground water from the site vicinity will likely find a way into the creek. Land use in the immediate area, and upstream of the site, is industrial.

7.2 SITE HYDROGEOLOGY

Located in central Niagara County, the site is in the Eastern Lake Section of the Central Lowland Physiographic Province, near the base of the Niagara Escarpment. The site and surrounding area are underlain by four types of consolidated formations (Attachment 7.2-1); the oldest of which is the Queenston Formation of Ordovician age. This shale is reported to be 1,200-feet thick. On top of the Queenston Formation is approximately 11 feet of sandstone termed the Whirlpool Formation, followed by 27 feet of the Power Glen Formation, and finally Grimsby Formation.

Two ground water zones are located beneath the site (Attachment 7.2-1). Zone 1 is located within the unconsolidated fill while Zone 2 is present in bedrock along the interface of the Grimsby and Power Glen formations. The water level in Zone 1 is 20 feet higher than the level in Zone 2. Due to the distance separating the two zones and the low permeability ($<5.1 \times 10^{-5}$ - see boring log

D-67), there is little vertical movement of ground water. The direction of Zone 2 ground water flow is to the west. Woodward-Clyde Consultants determined that ground water within Zone 1 (the unconsolidated fill material) is flowing north towards Mill Street (Attachment 7.3-3). The water level within the fill is less than 5 feet beneath the surface.

The Grimsby Formation protrudes through the surface in the site vicinity. The natural overburden material is a shallow layer of glacial till and soil; waste material comprises the remainder of the unconsolidated overburden.

It should be noted that only a partial copy of Attachment 7.2-1 is included in this report. Information was selectively included for the following borings: D-66, D-67, D-68A, D-69, and D-70. These borings/wells are within or nearest to the Norton landfill (Attachment 7.3-1).

7.3 SUMMARY OF PAST SAMPLING AND ANALYSIS

Ground Water

RECRA Research, Inc. collected ground water samples from the 22 wells placed by Bechtel Civil and Minerals, Inc. in the area of the site (locations shown in Attachment 7.3-1). Samples were collected on 3 and 4 November 1981 (Attachment 7.3-2). Results, pertinent to this report, indicate the presence of iron (260 mg/liter) and a total recoverable oil and grease concentration of 73 mg/liter. A second group of samples collected by Recra Research on 13, 16, and 17 November 1981 again indicated the presence of oil and grease (7 mg/liter) and zinc within the landfill.

On 15 November 1981, Woodward-Clyde Consultants, Inc., retained by the Somerset Railroad Corporation, collected samples from 9 of the 22 wells which Bechtel had placed (Attachment 7.3-3). The samples were analyzed for arsenic, lead, barium, cadmium, total chrome, nickel, zinc, copper, mercury, beryllium, and volatile organics. Only arsenic (0.068 mg/liter), zinc (0.400 mg/liter), and barium (1.80 mg/liter) were detected. Detection limits, however, were established at ground water quality standards and retesting was ordered by the

NYSDEC (Attachment 7.3-4). On 27 and 28 April 1982, samples were again collected from the same nine wells and analyzed at lower detection limits (Attachment 7.3-5). The results indicated the presence of arsenic (0.05 mg/liter), cadmium (0.005 mg/liter), chromium (0.008 mg/liter), lead (0.066 mg/liter), zinc (0.180 mg/liter), and oil and grease (3.17 mg/liter). PCBs were not detected (<0.50 µg/liter) nor were total organic halogens (<0.07 µg/liter) in any of the wells tested. Only arsenic and lead in well D-68 (screened in bedrock at 48-57 feet) exceeded state ground water standards. Oil and grease were highest in well D-70 (screened at 10-19 feet in the landfill).

Surface Water

On 15 November 1981, Woodward-Clyde Consultants collected a sample from Eighteen Mile Creek at the approximate location where the proposed railroad cut was to feed into the creek (Attachment 7.3-3). The sample was analyzed according to the same high detection limits set for the ground water samples collected on the same date. The results indicate a presence of zinc at 35 mg/liter.

Air

No data are available.

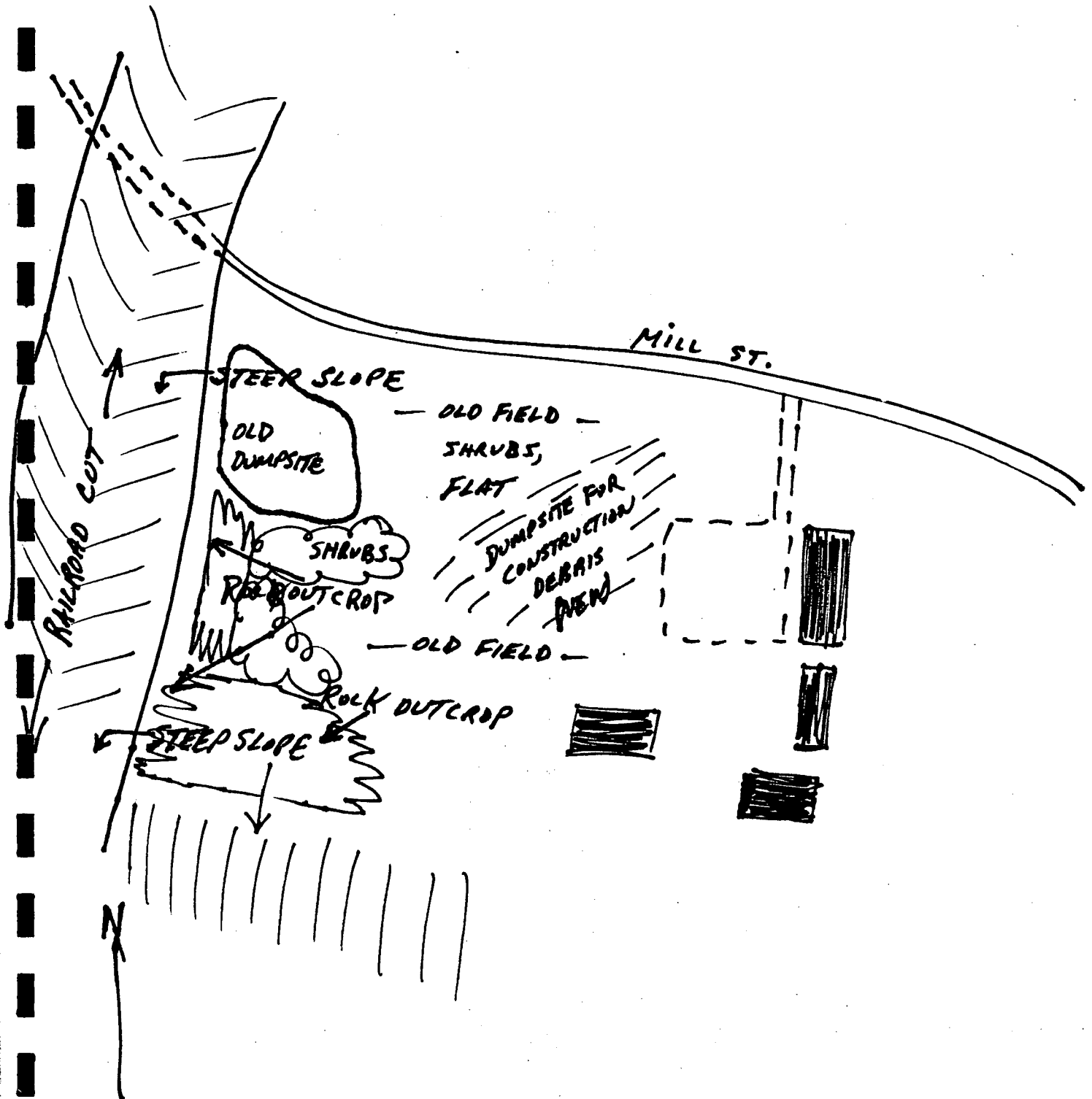
Soil

Soil contaminated by leaking drums was analyzed on 27 August 1982 for polychlorinated biphenyls (PCBs) (Attachment 6-4). The results indicated that the oily soil had a PCB concentration of 6.5 ppm.

A sample was collected directly from the leaking drum from the determination of its content. The drum waste was received at RECRA Research on 29 October 1982, whereupon it was evaluated for the characteristics of corrosivity, ignitability, reactivity, and EP toxicity. Most notably, the results indicate the presence of phenol (175 mg/liter), lead (0.097 mg/liter), and barium (5.2 mg/liter) (Attachment 7.3-6).

SITE SKETCH: NORTON LABORATORIES, INC. DISPOSAL SITE

12 MAY 1983



SOMERSET RAILROAD CORPORATION

HYDROGEOLOGIC STUDY

DANIELEWICZ ROUTE

Station 51+810 to 52+330

BECHTEL CIVIL & MINERALS, INC.

JOB NO. 14818

FEBRUARY 1982

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	i
1.0 Introduction	1
2.0 Conclusions	2
3.0 Landfill Description	4
3.1 Van De Mark Landfill	4
3.2 Norton/McGonigle & Hilger Landfill	5
4.0 Existing Landfill Monitoring	7
5.0 Subsurface Investigation and Observation Well Installation Program	8
5.1 Permeability Tests	10
5.2 Well Purging	10
6.0 Geology	13
7.0 Ground Water Occurrence	15
8.0 Ground Water Quality	18
8.1 Sampling and Analytical Procedures	18
8.2 Discussion of Results	19

REFERENCES	22
------------	----

LIST OF TABLES

1	Summary of Data on Van De Mark Observation Wells
2	Van De Mark and Norton McGonigle & Hilger Landfills Observation Well Data
3	Stratigraphic Column of the Niagara Escarpment Along The Danielewicz Route
4	Jointing Characteristics of Rocks in Van De Mark Landfill Area
5	Somerset Railroad Pressure Test Results
6	Response Test Results from Well Purging
7	Well Purging Summary Sheet

TABLE OF CONTENTS (Continued)

LIST OF TABLES (Continued)

8A through D	Results of Chemical Analyses Performed by RECRA Research, Inc.
9	Analysis of Van De Mark Samples April 1981
10	Analysis of Van De Mark Samples October 1981

LIST OF FIGURES

1	Location Map
2	Landfill Location Map
3	Boring Location Plan ← SEE WOODWARD-CLYDE REPORT
4	Grain Size Analysis of 2Q Sand
5	Typical Well Installation
6	Geologic Map of Landfill Area
7	Cross Section A (Sheet 1 of 5) Cross Section B (Sheet 2 of 5) Cross Section C (Sheet 3 of 5) Cross Section D (Sheet 4 of 5) Cross Section E (Sheet 5 of 5)
8	Water Level Contours - Zone 2
9	Water Level Contours - Zone 3
10	Water Level Contours - Zone 4
11	Hydrograph of Well Nest # 1 (Sheet 1 of 8) Well Nest # 2 (Sheet 2 of 8) Well Nest # 3 (Sheet 3 of 8) Well Nest # 4 (Sheet 4 of 8) Well Nest # 5 (Sheet 5 of 8) Well Nest # 6 (Sheet 6 of 8) Well Nest # 7 (Sheet 7 of 8) Well Nest # 8 (Sheet 8 of 8)
12	Hydrograph of Van De Mark Wells VDM 1 through VDM 6

TABLE OF CONTENTS (Continued)

APPENDICES

- A Boring Logs
- B Ground Water Observation Well Reports
- C Chemical Analysis

EXECUTIVE SUMMARY

The hydrogeologic study of the Danielewicz Route from Station 51+810 to 52+330 authorized September 15, 1981, in letter BNE-142, has as its objectives the determination of ground water flow direction relative to the proposed railroad cut through this area, and, based upon chemical indicators, the possibility of movement of known landfill constituents into the ground water intercepted by the proposed railroad cut. The study utilized ground water monitoring wells in concert with the analysis of selected chemical parameters to fulfill these objectives.

Analysis of ground water level data indicate that flows are generally east to west within the rock strata intercepted by the railroad cut. Due to the direction of ground water flow and the relative elevations of the Van De Mark Landfill and the railroad, the proposed cut should not receive any ground water from the Van De Mark Landfill which lies to the west. Chemical analyses of ground water samples from the response tested and bailed wells utilizing parameters indicative of inputs from the Van De Mark Landfill confirm this conclusion.

The study area was explored to a maximum depth of 109 feet, the approximate elevation of Eighteenmile Creek. Four relatively isolated zones of ground water were found, each occurring at different depths. The upper two zones consist of a shallow ground water zone (Zone 1) found in the area of the Norton Landfill to the east of the railroad cut, and a somewhat deeper zone (Zone 2) which occurs along the contact between the Grimsby and Power Glen Formations. The two lower zones found along the contacts between the Power Glen and Whirlpool Formations (Zone 3) and the Whirlpool and Queenston Formations (Zone 4) will not be intercepted by the cut.

The railroad cut will occur within Zone 2 rock strata near the Grimsby-Power Glen Formation contact. However, since this rock has a low to negligible permeability, the quantity of Zone 2 ground water reaching the

cut should be very small. Zone 1 water may not reach the cut due to the intervening Zone 2 rock. Initial chemical analyses of Zone 1 ground water from the unpurged wells indicated levels of iron, grease, and oil which, for reference purposes only, would exceed United States Environmental Protection Agency (EPA) industrial discharge regulations. Subsequent chemical analyses and samples following purging of the wells indicated that grease and oil levels were within the recommended limits.

Bechtel purged the observation wells in early November in preparation for a more detailed round of chemical analyses conducted after November 15 by Bechtel and others. The resampling and reanalysis conducted for Bechtel by RECRA Research, Inc. showed a substantial reduction in the oil and grease levels from the Zone 1 wells to below the EPA industrial discharge regulations.

SOMERSET RAILROAD CORPORATION
HYDROGEOLOGIC STUDY IN THE VICINITY
OF THE VAN DE MARK LANDFILL

1.0 INTRODUCTION

This report presents the results of the hydrogeologic investigation performed for the Somerset Railroad Corporation along the proposed Danielewicz Route from (approximately) Station 51+810 to 52+330 in the city of Lockport, New York (Figure 1). In this vicinity, the railroad grade descends to the north at a grade of approximately 1.6 percent. The descent from a bridge section crossing West Jackson Street and the Gulf requires a cut section between two landfills: the Van De Mark Landfill (VDM) on the west, and the Norton/McGonigle & Hilger (N/MH) Landfill on the east. The study was authorized pursuant to letter BNE-142 dated September 15, 1981, from Bechtel to New York State Electric and Gas Corporation.

Preliminary investigations performed during the Somerset Railroad alternative route selection analyses involved geologic field mapping and areal reconnaissance of the landfills and surrounding area. Concurrent with the field work was a search for existing data on the landfills from the files of owners and various public agencies.

The results of the preliminary investigation indicated that ground water levels in the area of the landfills could be at an elevation high enough to be intercepted by the cut between the two landfills (Figure 2). Sufficient data was not available, however, to determine the ground water flow direction nor the quality of the water which may be emanating from the landfills. To provide data necessary to evaluate the ground water levels, flow direction, and chemistry, 22 observation wells were installed. In-hole permeability testing was performed, water levels obtained and samples collected for chemical analysis. On the basis of these studies, an evaluation of the local ground water regime and a prediction of its interaction with the proposed railroad cut are presented.

2.0 CONCLUSIONS

Based upon data obtained through November 1981 the following observations are made:

- a. The permeability of the rock that will be exposed in the proposed cut is low to negligible (Section 7.0).
- b. Ground water occurs in relatively isolated zones in the rock and there is little to no vertical movement between zones. Only the upper two zones encountered may be affected by the proposed cut. The first zone is ground water encountered in the Norton Landfill, and the second zone is ground water present along the contact between the Grimsby and Power Glen Formations.
- c. Ground water in Zone 2 moves westerly, derived from the east. The proposed cut for the railroad will intercept that flow but the quantity discharging to the cut will be small.
- d. The potential for ground water in Zone 2 to move from the vicinity of the Van De Mark Landfill into the railroad cut, a reversal of present flow direction, is determined to be negligible.
- e. Ground water encountered in the Norton Landfill is identified as Zone 1 and may or may not reach the cut.
- f. Comparison of the chloride concentrations measured in ground water from the Zone 2 wells with similar chemical analyses conducted by the Van De Mark Chemical Corporation at its own landfill monitoring wells provides further indication that ground water from the Van De Mark Landfill is not moving in the direction of the proposed railroad right-of-way (Section 8.2.1).
- g. Ground water that may move into the railroad cut from the east is expected to have a chemical quality similar to that found in the Zone 1 and 2 wells (Section 8.2.2).

- h. Initial sampling of one of the Zone 1 wells (D-70) installed in the Norton Landfill had grease and oil levels which exceeded United States Environmental Protection Agency (EPA) regulations for industrial discharges (30 ppm). The initial high reading is believed to be derived from drilling activities. Subsequent sampling and analyses of the Zone 1 and 2 wells in mid-November, following well development and purging, revealed that the oil and grease levels in the Zone 1 wells were substantially below the EPA industrial discharge regulations. Well D-69, which is 75 feet westerly from well D-70, did not show significant levels of these two chemical parameters with regard to the EPA regulations in either round of sampling. Water moving from Zone 1 into the railroad cut may in time demonstrate a quality approaching that of well D-70 (Section 8.2.2).

3.0 LANDFILL DESCRIPTION

The following descriptions of the two landfills and general methods of the disposal operations are based on information contained in the files of the New York State Department of Environmental Conservation (DEC) and the Niagara County Department of Health, and from results of Bechtel field investigations.

3.1 Van De Mark Landfill

The VDM Landfill (Figure 2) contains chemical waste by-products from the Van De Mark Chemical Company of Lockport, New York. The landfill is in a former open pit quarry excavated in sandstone and limestone; the area is approximately two acres. It is located on a plateau bounded on the west and south sides by slopes descending to Eighteenmile Creek. Relief in the area is about 80 feet from Eighteenmile Creek to the relatively level area of the landfill. Access to the landfill is gained from the east along Mill Street located to the north of the landfill. Site access is controlled by a locked gate at Mill Street and another locked gate at the entrance to the landfill.

At its closest point, the landfill is approximately 125 feet west of the centerline of the proposed cut section. The elevation of the landfill is approximately 440 feet msl.

According to the Van De Mark Chemical Company's landfill application to DEC (1977), the method of disposal of wastes within the landfill consists of the excavation of a 7-foot-deep by 12-foot-wide trench. The trench bottom is then lined with fine crushed limestone for the treatment of waste and 55 gallon drums of waste are placed on top of the limestone. The space between the drums is backfilled with fine crushed limestone, the drums are punctured, sacks of limestone are placed on top of the drums, and the trench is backfilled to the original grade.

According to reports in the files of DEC, the waste material consists of 30 to 70 percent hexachlorodisiloxane, 10 to 50 percent silicon tetrachloride, and 5 to 30 percent carbon and silicon carbide. The hexachlorodisiloxane and silicon tetrachloride decompose into sand (silicon dioxide) and hydrochloric acid. Carbon and silicon carbide remain unchanged. The hydrochloric acid reacts with the limestone forming a neutral chloride salt. The residue is buried in drums; the owner reports that in 4 to 8 months the only visible remains are part of the drum rings used to seal the open head drum tops. According to the Van De Mark Chemical Company's landfill application to DEC, the entire waste mass will eventually become a sand pile with some salt content.

Presently, the active sections of the waste area are located within the southern one-third of the landfill (Figure 2). Prior to 1977, untreated waste was placed on the western portion of the landfill and allowed to decompose without the addition of limestone. DEC has given this landfill a code identification of "E" which indicates a closed controlled landfill in which monitoring is required.

3.2 Norton/McGonigle & Hilger Landfill

The Norton Landfill is situated approximately 400 feet east of the VDM Landfill, as shown on Figure 2. It is overlain in part by the McGonigle & Hilger Landfill. The areal extent of the Norton Landfill is unknown. The composite of these two landfills occupies about 4 to 5 acres. The area of the landfills is bounded on the north by Mill Street and on the south by a cliff leading down to Eighteenmile Creek. The east and southeast boundaries are formed by various manufacturing buildings. The landfill is about 110 feet above Eighteenmile Creek. Access to the landfill is gained from the east along Mill Street. The western boundary of this landfill extends to within approximately 60 feet of the centerline of the proposed railroad cut. The elevation of the landfill is about 473 feet msl. Depending on the final configuration of the cut in this vicinity, the western boundary of the Norton Landfill could extend to within 10 feet of the upper portions of the proposed railroad cut.

The Norton Landfill was used for the storage and recycling of thermoset plastic castings manufactured by Norton Laboratories, Inc., a facility located at the northwest intersection of North Transit Road and Mill Street but which is no longer in operation. Pieces of castings were noted in samples obtained from exploration holes, and during a reconnaissance of the area.

According to the DEC reports, waste lubricating oil in the amount of about 250 gallons/year was also stored there for recycling. Some documented spillage of the waste oil was reported. The period in which this occurred is unknown.

A portion of the site is now used by the McGonigle & Hilger Roofing Company for the disposal of roofing and general construction debris resulting from structural demolition. Asphalt, insulating material, tar paper, and general construction rubble are scattered over the site and a portion of the slope leading down to Eighteenmile Creek. Waste materials from the McGonigle & Hilger operations are deposited on the ground surface and spread periodically, probably by loader or bulldozer. A cover of natural soil material has been placed on top of some of the waste deposits. In the northern part of the area this waste is being spread over the Norton Landfill to a depth of about 6 to 8 feet. The western boundary of the McGonigle & Hilger Landfill is located 200 to 270 feet from the centerline of the proposed railroad cut.

DEC has given the Norton/McGonigle & Hilger Landfill a code identification of "F" which indicates that there is no toxic hazard.

4.0 EXISTING LANDFILL MONITORING

The only site investigation of the Norton Landfill complex is cited in the brief report from the DEC dated April 16, 1980. The coding assigned by DEC does not require the monitoring of ground water.

The Van De Mark Chemical Company documents the construction of four observation wells within the landfill boundary in their application to the DEC (1977). The wells were constructed in 1977 and are located within the disposal area of the landfill. Two additional wells were constructed in 1980 and are located at the foot of the escarpment adjacent to Eighteenmile Creek. Well locations are shown on Figures 2 and 3 and tabulated data regarding the wells is presented in Table 1.

Construction of each well is similar. On completion of drilling to the prescribed depth, an assembly of 2 to 5 feet of 1-inch-diameter well screen and 1-inch-diameter PVC riser casing was placed in the hole. The wells were sand-packed above the screen and a bentonite seal installed. However, the location of the seal is reported only for wells VDM-5 and 6. A steel protective pipe and a locking cap complete the surface installation.

Wells VDM-5 and 6 were sand-packed to within 1 foot of the top of rock surface, 4.4 feet and 5 feet below ground surface, respectively, and a 6-inch bentonite seal was placed prior to grouting to ground surface. Wells VDM-1 and 2 are shallow (less than 25 feet deep), penetrating about 14 feet into the Power Glen Formation to an elevation of about 422 feet msl. Wells VDM-3 and 4 are within the landfill and are 90 feet deep. They are completed in the Queenston Formation (see geology discussion, Section 6.0) to about elevation 350 feet msl.

Wells VDM-5 and 6 near Eighteenmile Creek were drilled to elevations of about 345 feet msl, and are also within the Queenston Formation.

5.0 SUBSURFACE INVESTIGATION AND OBSERVATION WELL INSTALLATION PROGRAM

The subsurface investigation began with the arrival of the first drilling rig at the site on October 13, 1981, and was completed on October 31, 1981. Eventually five drilling rigs were moved on site and work was performed 24 hours a day from October 23 through October 30, 1981. All drilling and well installation was performed by Empire Soils Investigations, Inc., Orchard Park, New York, under the technical direction of Bechtel geologists.

The investigation consisted of drilling 22 borings at the locations shown on Figure 3. Boring locations were chosen in order to provide a sufficient number of monitoring points to establish ground water elevation(s) and gradient(s). From this information the component of ground water flow into the proposed railroad cut from the east and west could be established. The holes were drilled to selected depths and completed as ground water observation wells. Borings were advanced by rotary coring with either standard or wire-line split inner-tube core barrels. Coring of the rock was performed in order to adequately determine the rock characteristics of the formations penetrated and to assist in the determination of the placement of the well screen and sand pack intervals. All holes were cored with NX and NQ side discharge diamond impregnated core bits. Water from the City of Lockport water system was used as drilling fluid in all holes to minimize and control the amount of unknown substances introduced into the hydrogeologic system.

At each of six locations between the two landfill areas, nests of three holes were drilled to shallow, intermediate, and deep levels, at which ground water observation wells were installed. A nest of two holes, intermediate and shallow, was drilled at a seventh location. In addition, two shallow holes were drilled within the Norton Landfill. The deepest hole at each location was pressure tested to determine the permeability of the fractures in the vicinity. Data on the well nests are summarized in Table 1 and locations are shown on Figure 3. Boring logs of the drill holes are presented in Appendix A.

After coring, each hole was reamed with a rock roller bit to a nominal diameter of 6 inches. This was done to facilitate the installation of a sand pack around the screen and riser pipe for the ground water observation wells.

Ground water observation wells are constructed of 2-inch flush coupled PVC pipe. Each well is completed with 10 to 40 feet of screen having machined horizontal slots measuring 0.010 inch in width. Riser pipe made of Schedule 40 or Schedule 80 PVC pipe is attached to the screen and extended about 2 feet above ground surface. A fine to medium sand designated as 2Q by the supplier, Pennsylvania Glass Sand, Inc., is placed around the screen and a minimum of 2 feet above the screen. The grain size analysis of the sand is presented in Figure 4. A minimum of 2 feet of bentonite pellets is placed on top of the sand to ensure that the appropriate zone is sealed. The annular space above the seal is grouted to the surface with portland cement grout and a steel protective casing with locking cap is installed. After installation, each well is response tested to ensure that the screen and sand pack are not clogged and allow the free passage of ground water. A typical well installation is presented in Figure 5. The selection of the monitored intervals has as its basis the geologic reconnaissance of the area which suggested that ground water movement occurs at or near the formation contacts. In general, the intervals screened and sampled are the fractured and more permeable zones in the following intervals: (1) from 15 feet below the base of the proposed cut section to approximately 5 feet above the Grimsby/Power Glen contact, Zone 2; (2) the contact between the Power Glen and Whirlpool Formations, Zone 3; (3) the contact between the Whirlpool and Queenston Formations, Zone 4. The placement of screen within definite zones allows the determination of interconnection between the various ground water zones and the amount of artesian confinement, if any, which may exist within the upper portions of the Queenston Formation.

Two additional observation wells were constructed to monitor a fourth interval (Zone 1) to determine water levels in the Norton Landfill. This

interval was added to the program because ground water was encountered while placing surface casing for nest 7. Data for these wells are also summarized in Table 2. Ground Water Observation Well Reports for each well are presented in Appendix B.

5.1 Permeability Tests

The deepest hole at each location was pressure tested to determine permeability. Pressure testing was performed in other holes at pre-selected intervals as directed by the geologist. Constant-head, in-situ permeability tests were performed in selected drilled holes in accordance with Designation E-18 of the U.S.B.R. Earth Manual (Ref. 7).

Pneumatic packers were used to seal off intervals of the borehole for testing. The test was begun by adding water through a metering system to maintain a constant pressure head. From recorded pressure, rate of flow, and time data, a permeability was calculated for the interval tested. Prior to testing and lowering of the test equipment, the borehole was surged and washed with clear water to remove cuttings from pores and joints of the rock. Table 5 summarizes the results of the tests.

5.2 Well Purging

Purging of the monitoring wells was conducted from November 9, 1981, through November 17, 1981, to acquire a representative sample of ground water for chemical analysis, and to reduce the amount of water that may have been affected by drilling and well construction. Secondary to purging, recovery rates for the purged wells were recorded and values of permeability were calculated from the data. The two methods used for well purging were nitrogen gas airlifting and hand bailing. Tables 6 and 7 summarize the well purging results.

5.2.1 Nitrogen Purging

The majority of the observation wells were purged using an air lift type apparatus utilizing bottled nitrogen gas rather than compressed air. Dry

nitrogen gas was used for purging due to its essentially inert properties and lack of volatiles, such as water vapor, which could alter the well water chemistry. The nitrogen gas was contained in 224 cubic feet capacity bottles, purchased from a local Airco distributor.

The apparatus consisted of 1/4- to 3/8-inch-diameter gas line with one end connected to the nitrogen bottle through a two-stage pressure regulator. The gas line extended along the outside of the water discharge hose with the other end inserted approximately 1 foot up inside the bottom of the discharge hose. The discharge hose was 1/2 or 3/4-inch black polyethylene pipe. The discharge and gas lines were taped together and inserted down the 2-inch PVC pipe of the observation well, keeping the lower end of the lines about 1 foot off the bottom of the well. The water was discharged into either calibrated 5-gallon plastic buckets or 20-gallon galvanized garbage containers.

5.2.2 Bailing

Hand bailing of six observation wells was required (D54, 55, 57, 60, 62, 68A). These wells contained less than 10 feet of water, which made the air lifting apparatus ineffective and inefficient due to lack of submergence.

Bailing was performed using a PVC bailer attached to a polypropylene rope. The wells could generally be bailed dry within a few minutes of bailing, therefore, the wells were allowed to recover and then rebailed in order to retrieve a sufficient well volume.

5.2.3 Volumes Purged

A minimum of two well volumes of water was purged from all wells. The majority of the wells were purged to over 4 well volumes. Calculation of well volume was based on adding the water volume within the PVC pipe and the pore volume in the sand pack between the outside of the PVC and the

wall of the drill hole. In calculating the exterior water volume, a 25-percent porosity of the sand pack was assumed. If the water level was below the bentonite seal capping the sand pack, then the calculated volume was only for the saturated column.

Observation wells D51, 52, 53, 55, 57, 69, and 70 were designated as priority holes requiring a minimum of 2 well volumes from purging. Wells which could be bailed dry were also purged to a minimum of 2 well volumes. Two well volumes for this condition are twice the requirement specified by the Environmental Protection Agency (EPA, 1977). The remainder of the observation wells were purged at a minimum of 4 well volumes as specified by the EPA (EPA, 1977). Observation wells D54, 55, 64, 66, 68A, 69, and 70 had approximately 10 additional gallons of water purged from them by Woodward-Clyde Consultants while in the process of obtaining water samples. These additional volumes have been considered in the calculation of well volumes purged.

6.0 GEOLOGY

The bluff on which the study area is situated is near the base of the Niagara escarpment, a major geomorphic feature that extends in an east-west direction across northern Niagara County.

The bedrock consists of nearly flat-lying (horizontal) sedimentary beds with a thin cover of unconsolidated glacial deposits, soil, and talus. The glacial deposits consist of unsorted fine to coarse sand with some traces of fine gravel, silt, and clay. The materials are commonly stiff and very compact.

The formations underlying the bluff are well-exposed in the road cut along West Jackson Street directly south of the landfills. These formations include, from oldest to youngest, the Queenston Formation of Ordovician age, and the Whirlpool, Power Glen, and Grimsby Formations of Silurian age. A stratigraphic column outlining the characteristics of all formations of the Niagara escarpment in the vicinity is presented in Table 3.

Bedding generally strikes N65W to east/west and dips less than one degree to the south. Considerable variation in orientation of bedding was observed in the cross-bedded sandstones of the Silurian formations. A geologic map prepared from field investigations and boring logs is presented in Figure 6. Geologic cross sections representing interpretation of drill hole data are presented in Figure 7, sheets 1 through 5.

The Queenston Formation, the lowermost formation exposed in the area, consists of reddish-brown shale with thin interbeds of greenish-gray shale and siltstone. Approximately 23 feet of the Queenston Formation is exposed in the West Jackson Street roadcut and 43.9 feet of the Formation was penetrated in drill hole D-56. Total thickness of the formation is reported to be 1200 feet. The elevation of the top of the Queenston is 397 feet msl at West Jackson Street and 404 feet msl in the vicinity of Mill Street.

The Whirlpool Formation is a gray to white sandstone. This unit is very hard and fine to medium grained with thin bands of gray shale. In the study area, the Whirlpool Formation outcrops are approximately 11 feet thick and the top of the unit at the West Jackson Street roadcut is at elevation 408 feet. Within the study area total thickness of the Whirlpool Formation as determined from rock cores ranged from 9.4 feet in D-63A to 14.6 feet in D-67.

The Power Glen Formation is a greenish-gray shale and siltstone interbedded with limestone, dolomite, and calcareous sandstone. Total thickness at West Jackson Street is not known due to a talus covering on the slope. Total thickness of the formation penetrated in the core holes ranged from 18.5 feet in D-67 to 28.6 feet in D-63A.

The Grimsby Formation includes a lower white to pale-green fine-grained sandstone and an upper reddish-brown sandstone with interbedded siltstone and shale.

The jointing characteristics of the various formations are shown in Table 4. Jointing in exposures of bedrock is uniform in orientation and character. Observations from rock core indicate the joints tend to be more open to the east near the bluff. The frequency of jointing ranges from 3 to 6 foot spacing. Three near-vertical joint sets present have orientations of N45W to N70W, N55E to N75E, and N10E to N30E. In addition, horizontal bedding joints are present. The near-vertical joints dip predominantly from 85° to vertically. Joint openings measured at outcrops near the Van De Mark Landfill ranged from closed to as much as 2 inches.

7.0 GROUND WATER OCCURRENCE

The rocks underlying the study area appear to have little to no primary (porous) permeability. The occurrence and movement of ground water is in the fractures and joints of the rocks. The core from the exploratory holes and the permeability testing indicate that more open jointing tends to occur near the contacts between formations. However, none of the zones tested are even of moderate permeability (Table 5). More open and frequent jointing appears to be present within the Whirlpool and Power Glen Formations near the cliff adjacent to West Jackson Street, which indicates that stress relief has occurred adjacent to this feature.

Water levels have been measured in the observation wells constructed during this program and the existing Van De Mark Landfill wells. They show that large differences in levels are present between ground water zones. To illustrate those relationships, water level contour maps shown on Figures 8 through 10, hydrographs shown on Figure 11 (sheets 1 through 8), and sections shown on Figure 7 (sheets 1 through 5) have been prepared. In addition, water levels recorded in the Van De Mark wells are shown on Figure 12. These data show that at least four zones of ground water are present between the ground surface and the Queenston Formation.

The first zone monitored (Zone 1) is ground water present in the area of the Norton Landfill. Only observation wells D-69 and D-70 are monitoring this zone. As illustrated by the section shown on Figure 7, sheet 5, the water level in Zone 1 is more than 20 feet higher than the level in Zone 2, the Grimsby/Power Glen contact. Considering the large difference in head and the low permeability of the formations underlying the landfill, this indicates little to no vertical movement of ground water. It can be seen on the section that ground water in this zone may extend to the cut. The upper portions of the cut will be within 10 feet of the backfill contained in the Norton Landfill.

The second zone monitored (Zone 2) is ground water at the Grimsby/Power Glen contact. Section D-D' (Figure 7, sheet 4) has been constructed along the proposed cut alignment. It can be seen on the section that

ground water of Zone 2 will be intercepted by the cut and that ground water zones below Zone 2 will not be encountered by the cut. Further evidence is given by Sections A-A', B-B', C-C' (Figure 7, sheets 1 through 3).

The apparent direction of ground water movement in Zone 2 is to the west. Thus, the proposed cut would intercept flow in Zone 2 moving from the east or in the vicinity of the Norton Landfill and prevent it from continuing beneath the Van De Mark Landfill. Because of this interception there will be a small reversal of gradient along the western embankment between the cut and the Van De Mark Landfill. Because of the lack of recharge that would be available west of the cut and the small gradient that would develop, flow in Zone 2 from beneath the Van De Mark Landfill to the cut should not occur.

The third and fourth zones monitored (Zone 3 and Zone 4) are the ground waters at the Power Glen/Whirlpool and Whirlpool/Queenston contacts, respectively. The apparent direction of ground water movement in these zones is to the south. Water in these zones is below the base of the cut, therefore, Zones 3 and 4 will not be encountered by the cut.

The permeability measurements made in the Grimsby and Power Glen Formations range from 2.1×10^{-3} to 1.27×10^{-6} cm/sec., and the four measurements beneath the Norton Landfill taken in D-67 were less than 5.1×10^{-5} cm/sec. These measurements are supported by the permeability measurements made from the well purging data. The higher permeabilities measured were from drill holes close to the bluff, for example, D-53 and D-55. This probably reflects the condition of the jointing. Near the bluff, the rock is more jointed and permeable. Away from the bluff and with depth, joints become less frequent and tight. It is probable that the effective permeability of Zone 2 along the shortest path between the Norton Landfill and the proposed cut is less than 10^{-5} cm/sec. Along other possible paths closer to the bluff, the effective permeability may

be as high as 10^{-4} cm/sec. Considering this range of permeability and the available hydraulic gradient indicated by the water level contours of Figure 8, the rate of discharge to the proposed cut that can be expected will be very small.

The potential for inflow to the proposed cut from Zone 1 cannot be estimated with the available data. The extent of Zone 1 and the permeability of the materials are not well-defined.

8.0 GROUND WATER QUALITY

The centerline of the proposed Danielewicz right-of-way passes through a cut approximately 125 feet (at its closest point) east of the Van De Mark Chemical Company Landfill and approximately 60 feet (at its closest point) west of the Norton Landfill. A description of these landfills is presented in Section 3.0.

The base of the cut is below existing water table elevations. For this reason, a ground water quality program was initiated to provide additional indicators of the movement of ground water into the railroad cut from the landfill areas to the east and west.

8.1 Sampling and Analytical Procedures

Based on an investigation of the existing New York State Department of Environmental Conservation records, Niagara County Health Department files, and other investigations of the history of the two landfills, a list of chemical parameters to be determined in the ground water was established. The list consisted of eight chemical parameters (Tables 8 through 10) of which chloride was expected to be the prime indicator of chemical contribution to ground water from the Van De Mark Landfill and oil and grease from the Norton Landfill. Twenty-two wells were installed at the locations and depths shown in Figure 3. The details of well construction are given in Figure 5 and Section 5.0.

Sampling and chemical analyses were performed by RECRA Research Incorporated of Tonawanda, New York. Two rounds of sampling and analyses were undertaken in November, 1981. The first round of sampling occurred on November 2 and 3, following completion of drilling and response testing of the wells. Each of the Zone 1, 2, 3, and 4 wells was sampled at that time, with samples split in the field to facilitate duplicate analyses. Following receipt of the first round analytical results, it was determined that the Zone 1 and 2 wells would be resampled. These wells were then purged according to EPA guidelines in preparation for the second round of sampling and analyses (Section 5.2).

The second round samples were withdrawn from the purged Zone 1 and 2 wells in mid-November. All sampling was accomplished using a steel pipe bailer, with a new bailer utilized to sample each well. Conductivity, pH, and temperature determinations were made in the field at the time of sampling. All other analyses were performed in RECRA Research, Incorporated's laboratory facilities in Tonawanda, New York. All laboratory analyses were performed in accordance with EPA methodologies. The results of the first round analyses are shown in Tables 8A, B, C, and D. Appendices C-1 and C-2 contain the laboratory data sheets from both the first and second round of analyses. The second round analyses included additional chemical parameters at the direction of Somerset Railroad Corporation.

8.2 Discussion of Results

8.2.1 Van De Mark Landfill

Tables 9 and 10 contain the most recent quarterly analyses of ground water samples taken from Van De Mark Chemical Company monitoring wells installed at that company's landfill as part of their routine landfill monitoring program. Locations of the wells are shown on Figures 2 and 3 and marked VDM 1, 2, 3, and 4. They are presented here for comparison with analyses taken in the area of the proposed railroad right-of-way, to the east of the landfill.

Tables 8A, B, C, and D show results of the first round analyses from the 22 unpurged wells installed at the different elevations necessary to allow sampling of each of the water bearing zones in the area independently.

- o Table 8-A shows results from the Grimsby-Power Glen interval (Zone 2).
- o Table 8-B shows results from the Power Glen-Whirlpool interval (Zone 3).

- o Table 8-C shows results from the Whirlpool-Queenston interval (Zone 4).
- o Table 8-D shows results from shallow wells at the topsoil - Grimsby (Zone 1).

The laboratory data sheets for the first round analyses are found in Appendix C-1, with the second round analyses in Appendix C-2. The base of the railroad cut as it passes near the Van De Mark Landfill varies from approximately elevations 436 feet msl to 442 feet msl. If ground water is intercepted in this area, it is expected to be of a quality similar to that of Zone 2.

A comparison of the Zone 2 chloride concentrations from the first and second rounds of sampling (Table 8A and Appendices C-1 and C-2) with those taken from the Van De Mark monitoring wells shown in Tables 7 and 8 provides further indication that no movement of ground water from the Van De Mark Landfill towards the railroad right-of-way occurs, consequently, no encroachment of ground water into the cut from this landfill is expected.

8.2.2 Norton Landfill

The Norton Landfill is described in Section 3.2 of this report. The edge of the proposed cut passes approximately 10 feet to the west of the landfill at its closest point. The elevation of the centerline at the base of the cut varies from approximately 431 feet msl at Mill Street to 442 feet msl at the bridge transition on the north side of the Gulf. Due to the proximity of the proposed railroad cut to Zones 1 and 2, illustrated in Figure 7, sheet 5, ground water intercepted by the cut in this area is expected to be of a chemical quality similar to that found in Zones 1 and 2. Wells D-69 and D-70 were installed in the landfill with screening at the overburden/Grimsby interface (Zone 1). The first round of chemical analyses (Table 8D) showed recoverable oil and grease concentrations (73

and 31 mg/l) from well D-70 which, as a means of comparison, exceeded EPA industrial discharge regulations (30 mg/l). Well D-69, 75 feet to the west of D-70, did not show similar levels of oil and grease. The second round of analyses following purging of the wells (Appendix C-2) showed a recoverable oil and grease concentration in the D-70 sample (7 mg/l) which was substantially less than the first round results, and below the EPA industrial discharge regulation. It is suspected that well D-70 may have been contaminated by the drill rig or other activity prior to initial sampling.

Following purging, an expanded program was undertaken by others to further define the quality of the Zone 1 and 2 ground water that may be intercepted by the railroad cut.

REFERENCES

1. Application for Approval to Construct a Solid Waste Management Facility. New York State Department of Environmental Conservation, 1977.
2. EPA. "Procedures Manual for Ground Water, Monitoring at Solid Waste Disposal Facilities," Environmental Protection Agency Manual SW-611, p. 269. 1980.
3. Freeze, A. J., and Cherry, J. A. Ground Water, Prentice-Hall Inc., Englewood Cliffs, N.J., p. 604. 1979.
4. Johnston, R. H. "Ground Water in the Niagara Falls Area, New York," State of New York Conservation Department Water Resources Commission, Bulletin GW-53, p. 93. 1964.
5. Scalf, M. R.; McNabb, J. F.; Dunlop, W. J.; Cosby, R. L.; and Fryberger, J. Manual of Ground Water Sampling Procedures. National Water Well Association, p. 93. 1981.
6. Schuller, R. M.; Gibb, J. P.; and Griffin, R. A. "Recommended Sampling Procedures for Monitoring Wells," Ground Water Monitoring Review, Vol. 1, No. 1, pp. 42-47.. 1981.
7. U.S. Department of the Interior. Earth Manual, United States Government Printing Office, Washington, D.C., pp. 573-592. 1974.

TABLE 1
SUMMARY OF DATA ON VAN DE MARK
OBSERVATION WELLS

WELL NO.	SOUNDED DEPTH (FT)	DRILLED DEPTH (FT)	GROUND ELEVATION AT WELL (FT. MSL)	ELEVATION BOTTOM OF OPEN AREAS (MSL)	FORMATION WELL COMPLETED IN	REMARKS
1	18.8	22	442.2	420.2	Power Glen	Response test calculations show permeability of 2.48×10^{-6} cm/sec. Water level elevations range from 434.5 ft. to 430.2 ft. from 4-12-81 to 11-20-81.
2	23.0	23.0	441.7	418.7	Power Glen	No response test performed, blockage in casing. Since 4-13-81 water levels have fluctuated from 427.8 to 430.4.
3	84.0	90.0	442.18	352.18	Queenston	Well responded to test, recovery levels too slow to calculate permeability. Assume permeability is very low. Since 4-13-81 water levels have fluctuated between 373.7 and 362.1 ft. msl.
4	71.4	90.0	437.66	347.66	Queenston	Well responded to test, no calculation of permeability done. Well responded too quickly to take measurements. Water level elevations consistently recorded between 405.5 and 406.4 ft. msl.
5	18.7	20	365.6	345.6	Queenston	Well responded to test, no calculations done. Response of well too slow. Since 9-1-81 water levels have fluctuated from 347 ft. to 352 ft. msl.
6	16.9	20	365.6	345.6	Queenston	No response test performed, not enough water to bail. Since 9-1-81 water levels have fluctuated from 349 ft. to 353 ft. msl.

For location of wells see Figure 3

TABLE 2

SOMERSET RAILROAD
VAN DE MARK/NORTON MCGONIGLE HILGER LANDFILL
OBSERVATION WELL DATA

<u>BORING NO.</u>	<u>WELL NEST NO.</u>	<u>GROUND SURFACE ELEVATION</u>	<u>ELEV. OF BOTTOM WELL</u>	<u>RISER ELEV.</u>	<u>SCREEN INTERVAL (EL.)</u>	<u>FORMATION SCREENED</u>
D-49	1	459.8	408.5	461.90	409.5 - 418.8	Power Glen/Whirlpool
D-50	1	460.8	369.8	462.69	373.2 - 410.3	Whirlpool/Queenston
D-51	1	459.5	418.5	461.77	419.5 - 444.8	Grimsby/Power Glen
D-52	2	466.5	380.5	468.69	381.5 - 405.5	Whirlpool/Queenston
D-53	2	467.4	421.8	469.18	422.8 - 442.3	Grimsby/Power Glen
D-54	2	466.4	408.4	468.46	409.4 - 424.3	Power Glen/Whirlpool
D-55	3	467.4	422.4	469.36	423.3 - 439.4	Grimsby/Power Glen
D-56	3	467.3	360.3	469.44	362.3 - 407.5	Whirlpool/Queenston
D-57	3	467.0	407.5	469.27	408.5 - 426.2	Power Glen/Whirlpool
D-58	4	465.7	414.5	467.68	415.6 - 440.7	Grimsby/Power Glen
D-59	4	465.0	365.0	467.25	366.0 - 409.1	Whirlpool/Queenston
D-60	4	465.7	407.7	467.75	408.9 - 422.7	Power Glen/Whirlpool
D-61	5	467.4	421.5	469.31	422.5 - 441.4	Grimsby/Power Glen
D-62	5	469.0	409.9	471.04	410.9 - 422.7	Power Glen/Whirlpool
D-63A	6	469.6	368.6	471.63	369.4 - 404.6	Whirlpool/Queenston

TABLE 2 (Continued)

<u>BORING NO.</u>	<u>WELL NEST NO.</u>	<u>GROUND SURFACE ELEVATION</u>	<u>ELEV. OF BOTTOM WELL</u>	<u>RISER ELEV.</u>	<u>SCREEN INTERVAL (EL.)</u>	<u>FORMATION SCREENED</u>
D-64	6	469.1	421.4	471.37	422.4 - 437.1	Grimsby/Power Glen
D-65	6	469.1	406.1	471.33	407.1 - 422.1	Power Glen/Whirlpool
D-66	7	464.4	426.4	466.33	427.4 - 440.4	Grimsby/Power Glen
D-67	7	462.9	362.9	465.91	363.9 - 408.9	Whirlpool/Queenston
D-68A	7	465.2	407.2	467.55	408.2 - 421.2	Power Glen/Whirlpool
D-69		464.4	447.0	466.11	447.2 - 458.4	Grimsby/Soil Landfill
D-70		466.3	446.9	468.10	447.2 - 458.3	Grimsby/Soil Landfill

TABLE 3

STRATIGRAPHIC COLUMN OF THE NIAGARA ESCARPMENT
ALONG THE DANIELEWICZ ROUTE

SYSTEM.	SERIES	GROUP	FORMATION	MEMBER	THICKNESS	DESCRIPTION
Silurian	Niagaran	Lockport	Lockport	Goat Island	8'+	<u>Limestone</u> : Medium to dark gray, thin to medium-bedded, medium hard, coarsely crystalline, fresh to slightly weathered. Abundant fossils. Occasional thin dolomite interbeds. Frequent irregular wavy bedding planes.
				Gasport	5'	<u>Dolomite</u> : Medium brown to medium gray, medium-bedded to massive, hard, fine to very fine crystalline, fresh to slightly weathered.
				Decew	4-5'	<u>Dolomite</u> : Medium brown to dark gray, thin-bedded, medium hard, very fine crystalline, slightly to moderately weathered. Occasional shell lenses, faint lamination and pitted surfaces. Gradational contact with Rochester formation.
		Clinton	Rochester		~70'	<u>Shale</u> : Dolomitic, dark gray, thin-bedded fissile, medium hard, microcrystalline, severely weathered. Occasional thin dolomite and limestone interbeds. Seldom more than 5' exposed before completely weathered to clay. Clay minerals: illite, chlorite, kaolinite, occasional montmorillonite.
			Irondequoit	Unnamed	12'	<u>Limestone</u> : Medium brown to medium gray with pinkish tint, thin to medium-bedded, hard, coarsely crystalline, fresh to slightly weathered, fossiliferous. Pink crystals: Rhodochrosite?

TABLE 3 (Continued)

SYSTEM	SERIES	GROUP	FORMATION	MEMBER	THICKNESS	DESCRIPTION
Silurian	Niagaran	Clinton	Irondequoit	Rockaway	9.0' +	<u>Limestone</u> : Dark gray, hard, fine to coarsely crystalline, occasional shale partings. Fresh to severely weathered at shale partings.
			Reynales		1.0'	<u>Lime Dolomite</u> : Medium to dark gray, thin to medium-bedded, medium hard to hard, very fine to coarsely crystalline, slightly to severely weathered, contorted beds and occasional clay filled solution cavities.
			Neahga		1.0'-1.5'	<u>Shale</u> : Dark gray, thin-bedded, very soft, fresh.
		Medina	Thorold		2.0'	<u>Mudstone</u> : Light green, medium soft, calcareous, fresh.
			Grimsby	Zone B	15.0'	<u>Sandstone</u> : Red to green, medium-bedded to massive, medium hard, fine grained, fresh to severely weathered. Occasional shale partings and siltstone and claystone interbeds.
				Zone A	~60'	<u>Sandstone, Siltstone with interbedded Shale</u> : Dark red brown to light green to white sandstone and siltstone with red and green shale interbeds. <u>Sandstone/Siltstone</u> : Thin to medium-bedded, very fine to medium grained, medium hard to very hard, fresh, occasional green mottling, fossiliferous. <u>Shale</u> : Thin bedded to fissile, medium soft, moderately to severely weathered.

TABLE 3 (Continued)

SYSTEM	SERIES	GROUP	FORMATION	MEMBER	THICKNESS	DESCRIPTION
Silurian	Niagaran	Medina	Power Glen		27.0'	<u>Shale</u> : With interbedded Dolomite and calcareous <u>Sandstone</u> : 60% shale, 40% dolomite and sandstone. <u>Shale</u> : dark gray to green, thin-bedded to fissile, medium soft to soft, microcrystalline, severely weathered. <u>Dolomite</u> and <u>Sandstone</u> : dark gray to green thin-bedded, medium hard, fine-grained, fresh to moderately weathered. Sandstone is cross-bedded.
			Whirlpool		12.0'	<u>Sandstone</u> : White with black speckling (quartz and unknown black mineral), thin-bedded in upper 2', medium-bedded to massive in remainder, fine-grained, hard to very hard, fresh. Cross-bedded, ripple marks.
Ordovician	Cincinnatian	Richmond	Queenston		1200'+	<u>Claystone</u> : Dark reddish-brown with pale green mottling and occasional thin pale green claystone interbeds, medium soft to very soft, calcareous, fresh to completely weathered.

TABLE 4

JOINTING CHARACTERISTICS OF ROCKS
IN VDM LANDFILL AREA

FORMATION/ROCK TYPE	PREDOMINANT JOINT ORIENTATION OPEN SPACE (IN.)/SPACING		
Grimsby/Sandstone, Siltstone, Shale	N60W to E-W Closed* to 2"/3"-30"	N60 to 70E Closed to ¼"/6"-30"	N20 to 30E Closed to 2"/18"-24"
Power Glen/Sandstone, Siltstone, Shale, Limestone, Dolomite	N45 to 70W Tight**/3'-6'	N65 to 70W Tight/2'-6'	
Whirlpool/Sandstone, Ortho- quartzite	N55 to 70W Closed to 2"/2'	N70E Closed to 1"/2'-4'	
Queenston/Siltstone, Shale	N70W Closed /2'-6'	N55 to 75E Closed/2'-6'	N10 to 30E Closed/2'-4'

Note: Dip of joints consistently 85° to vertical measured from the horizontal.

* "Closed" describes open space ≤ 0.1 mm.

**"Tight" describes open space 0.1 mm to 1 mm.

TABLE 5
SOMERSET RAILROAD
PRESSURE TEST RESULTS

<u>BORING NO.</u>	<u>ELEVATION INTERVAL TESTED (MSL)</u>	<u>PERMEABILITY CM/SEC</u>	<u>FORMATION</u>
D-50	372.6 - 383.4	No Water Take*	Queenston
	382.9 - 393.4	No Water Take**	Queenston
	392.9 - 403.4	No Water Take**	Queenston
	402.9 - 413.4	No Water Take*	Whirlpool
	412.9 - 423.4	5.2×10^{-4}	Power Glen
	422.9 - 433.4	4.8×10^{-4}	Power Glen
	437.9 - 443.4	7.7×10^{-6}	Grimsby
D-52	379.0 - 389.5	No Water Take*	Queenston
	386.0 - 396.5	No Water Take*	Queenston
	396.0 - 406.5	2.0×10^{-5}	Queenston
	406.0 - 416.5	1.5×10^{-4}	Whirlpool
	416.0 - 426.5	2.1×10^{-6}	Power Glen
D-53	421.5 - 432.27	2.74×10^{-6}	Power Glen
	434.9 - 445.4	1.3×10^{-3}	Grimsby
D-55	423.4 - 433.9	1.7×10^{-4}	Power Glen
	436.2 - 441.2	2.1×10^{-3}	Grimsby
D-56	359.8 - 370.3	No Water Take*	Queenston
	366.8 - 377.3	4.8×10^{-7}	Queenston
	376.8 - 387.3	Test Invalid	Queenston
	386.8 - 397.3	1.0×10^{-2}	Queenston
	396.8 - 407.3	2.1×10^{-6}	Queenston
	406.8 - 417.3	1.5×10^{-4}	Whirlpool
	416.8 - 427.3	Test Invalid	Power Glen
	426.8 - 437.3	Test Invalid	Power Glen
D-59	368.6 - 379.1	1.8×10^{-4}	Queenston
	378.6 - 389.1	7.9×10^{-7}	Queenston
	388.6 - 399.1	No Water Take†	Queenston
	398.6 - 409.1	3.5×10^{-6}	Queenston
	408.6 - 419.1	4.4×10^{-6}	Whirlpool
	418.6 - 429.1	3.4×10^{-6}	Power Glen
	428.6 - 439.1	7.0×10^{-7}	Power Glen

TABLE 5 (Continued)

<u>BORING NO.</u>	<u>ELEVATION INTERVAL TESTED (MSL)</u>	<u>PERMEABILITY CM/SEC</u>	<u>FORMATION</u>
D-63A	372.25 - 381.75	No Water Take*	Queenston
	379.5 - 390.0	No Water Take*	Queenston
	389.5 - 400.0	No Water Take*	Queenston
	399.5 - 410.0	1.3×10^{-6}	Whirlpool
	409.5 - 420.0	7.3×10^{-5}	Power Glen
	419.5 - 430.0	1.3×10^{-6}	Power Glen
	429.5 - 440.0	1.3×10^{-5}	Power Glen
	439.5 - 450.0	4.3×10^{-4}	Grimsby
	449.5 - 460.0	2.3×10^{-4}	Grimsby
D-67	368.03 - 378.52	3.7×10^{-6}	Queenston
	378.02 - 388.52	3.7×10^{-6}	Queenston
	388.02 - 398.52	3.7×10^{-6}	Queenston
	398.02 - 408.52	3.7×10^{-6}	Whirlpool
	408.02 - 418.52	1.0×10^{-5}	Whirlpool
	418.02 - 428.52	5.1×10^{-5}	Power Glen
	428.02 - 438.52	3.7×10^{-6}	Power Glen
	438.02 - 448.52	1.27×10^{-6}	Grimsby

*Test performed at 10, 15, and 20 psi.

**Test performed at 10 and 15 psi.

†Test performed at 15, 20, and 25 psi.

TABLE 6

RESPONSE TEST RESULTS FROM WELL PURGING

<u>BORING NO.</u>	<u>TEST INTERVAL</u>	<u>PERMEABILITY CM/SEC</u>	<u>REMARKS</u>
D-49	409.5 - 420.1	2.07×10^{-5}	
D-50	373.2 - 410.3	1.21×10^{-5}	
D-51	419.5 - 440.3	9.1×10^{-6}	
D-52	381.5 - 405.5	5.8×10^{-6}	
D-53	422.8 - 441.6	2.4×10^{-4}	
D-54			insufficient recovery
D-55			insufficient recovery
D-56	362.2 - 407.5	2.9×10^{-7}	
D-57	408.5 - 412.1	1.4×10^{-4}	
D-58			dry
D-59	366.0 - 409.1	1.4×10^{-5}	
D-60			insufficient recovery
D-61	422.5 - 436.4	4.0×10^{-5}	
D-62	410.9 - 419.0	4.2×10^{-5}	
D-63	369.4 - 404.6	1.3×10^{-6}	
D-64	422.4 - 437.1	2.8×10^{-5}	
D-65			insufficient recovery
D-66	427.4 - 439.2	2.2×10^{-5}	
D-67	363.9 - 408.9	2.1×10^{-6}	
D-68	408.2 - 412.6	2.4×10^{-5}	
D-69	447.2 - 458.4	1.5×10^{-4}	
D-70	447.2 - 458.3	1.6×10^{-4}	

TABLE 7

WELL PURGING SUMMARY SHEET

<u>BORING NO.</u>	<u>AMOUNT CALCULATED TO BE PURGED</u>	<u>AMOUNT ACTUALLY PURGED</u>	<u>WELL VOLUMES PURGED</u>	<u>DATE COMPLETED</u>
D-49	25.4	27.4	4.3	11/16
D-50	74.2	73.0	4.0	11/18
D-51	19.8	35.0	3.6	11/11
D-52	24.8	38.5	3.1	11/11
D-53	18.3	32.5	3.3	11/11
D-54	3.9	4.75 +10	7.5	11/18
D-55	9.7	5 +10	3.1	11/12
D-56	90.1	86.1	3.95	11/17
D-57	4.05	4	2.0	11/14
D-58	--	--	--	--
D-59	83.5	88.3	4.2	11/18
D-60	4.3	10.0	5.0	11/17
D-61	28.1	33.5	4.8	11/13
D-62	14.4	10.25	2.9	11/17
D-63A	70.9	90	5.1	11/13
D-64	32.6	42 +10	6.3	11/13
D-65	22.1	--	--	--
D-66	23.0	23 +10	5.7	11/16
D-67	85.6	89.3	4.2	11/16
D-68	9.9	4.5 +10	2.9	11/18
D-69	21.2	25 +10	3.3	11/12
D-70	22.1	28 +10	3.4	11/12

TABLE 8-A

RESULTS OF CHEMICAL ANALYSES PERFORMED BY RECRA RESEARCH, INC.

ZONE 2		GRIMSBY/POWER GLEN CONTACT ELEV. 419 - 437.2						
Well No.	Temp. (C)	pH	Specific Conductance μ mhos/cm	TOC mg/l	TDS mg/l	CL mg/l	Oil & Grease mg/l	T Fe mg/l
D51	12.5	6.90	295	2.4	260	28	<5	6.1
	12	7.15	295	5.2	260	27	<5	14
D53	12	6.65	353	8.1	280	32	<5	3.8
	12	6.75	360	4.2	340	32	<5	2.5
D55	12	6.55	430	4.8	370	37	<5	7.1
	11.5	6.80	430	4.7	360	37	<5	4.8
D58	DRY HOLE							DRY HOLE
D61	10	6.65	420	6.0	410	36	26	2.0
	10	6.75	510	10	390	36	<5	11
D64	11.5	8.20	244	5.7	180	24	8	1.8
	13.0	8.45	242	6.8	170	23	<5	21
D66	13	7.50	1,040	4.0	860	200	<5	8.0
	12.5	7.45	1,000	4.4	830	190	<5	1.6

TABLE 8-B

RESULTS OF CHEMICAL ANALYSES PERFORMED BY RECRA RESEARCH, INC.

ZONE 3			POWER GLEN - WHIRLPOOL CONTACT ELEV. 407.1 - 420.2					
Well No.	Temp. (C)	pH	Specific Conductance μ mhos/cm	TOC mg/1	TDS mg/1	CL mg/1	Oil & Grease mg/1	T Fe mg/1
D49	11.5	8.85	283	1.1	290	20	<5	16
	12	9.00	305	1.3	290	20	<5	8.8
D54	11	9.50	1,480	2.4	1,400	290	<5	22
	11	9.65	1,480	6.4	1,400	270	<5	49
D57	10	8.10	483	3.8	540	39	<5	9.8
	10	8.15	415	3.7	660	40	<5	11
D62	10	9.95	510	3.3	550	19	6	17
	10	10.25	505	1.5	520	19	<5	18
D65	11.5	7.85	1,290	4.5	1,200	37	<5	4.8
	11.5	8.30	1,290	9.5	1,100	37	<5	3.3
D68-A	12	8.75	255	1.8	230	19	<5	8.4
	12	8.95	258	2.5	240	20	<5	6.7
D60	10.5	7.35	1,680	8.1	1,700	36	<5	16
	10.5	7.55	1,700	7.3	1,800	30	<5	2.9

TABLE 8-C

RESULTS OF CHEMICAL ANALYSES PERFORMED BY RECRA RESEARCH, INC.

ZONE 4			WHIRLPOOL - QUEENSTON ELEV. 362.3 - 405.9					
Well No.	Temp. (C)	pH	Specific Conductance μ mhos/cm	TOC mg/l	TDS mg/l	CL mg/l	Oil & Grease mg/l	T Fe mg/l
D50	12	11.90	1,830	4.5	790	33	<5	0.91
	11.5	11.90	1,830	5.7	750	33	<5	0.90
D52	12.5	6.35	3,000	8.8	2,700	1,100	30	1.4
	12	7.15	2,690	9.6	2,300	910	6	0.70
D56	11	10.45	500	6.4	460	79	<5	5.6
	11	10.70	600	5.0	480	79	<5	7.2
D59	10.5	8.30	249	4.5	220	22	<5	2.6
	10.5	8.25	251	7.9	220	22	<5	2.8
D63-A	12	9.65	255	5.6	270	23	<5	4.7
	11	9.80	275	5.8	270	24	<5	3.0
D67	13	10.65	540	3.2	410	33	<5	3.1
	12.5	10.75	530	2.0	410	33	15	3.5

TABLE 8-D

RESULTS OF CHEMICAL ANALYSES PERFORMED BY RECRA RESEARCH, INC.

ZONE 1		MISC. SOIL - ELEV. 447.2 - 456.6						
Well No.	Temp. (C)	pH	Specific Conductance μ mhos/cm	TOC mg/1	TDS mg/1	CL mg/1	Oil & Grease mg/1	T Fe mg/1
D69	14	6.7	800	6.8	670	29	14	7.4
	14	6.8	780	8.7	730	29	<5	89
D70	14.5	6.85	640	24	570	31	73	120
	13	6.80	540	33	590	32	31	260

TABLE 9
ANALYSIS OF VAN DE MARK SAMPLES
BY
ADVANCED ENVIRONMENTAL SYSTEMS, INC.

Sample Date April 1981						
Sample Site	pH	TDS mg//l	TOC mg/l	DO mg/l	CL mg/l	Specific Conductance µmhos/cm
Eighteenmile Creek Site No. 1	8.27	411	11.5	10.1	53.2	609
Eighteenmile Creek Site No. 2	8.26	429	12.8	10.0	52.1	619
Eighteenmile Creek Site No. 3	8.39	439	15.6	8.90	48.9	612
Landfill Well No. 1 (22' Deep)	8.27	1,820	30.9	7.65	1,010.	2,540
Landfill Well No. 2 (23' Deep)	10.2	1,710	50.0	6.90	417.	2,350
Landfill Well No. 3 (90' Deep)*	7.08	21,200	374.	4.40	4,470.	19,400
Landfill Well No. 4 (90' Deep)*	4.71	19,930	90.2	0.90	12,300.	24,300
Landfill Swale	7.05	784	18.1	9.05	245.	1,250

*Wells 3 & 4 are transposed on Figures 2 and 3.

TABLE 10
ANALYSIS OF VAN DE MARK SAMPLES
BY
ADVANCED ENVIRONMENTAL SYSTEMS, INC.

Sample Date October 1981						
Sample Site	pH	TDS mg/l	TOC mg/l	DO mg/l	CL mg/l	Specific Conductance µmhos/cm
Eighteenmile Creek Site No. 1	7.56	38.3	5.1	9.3	39	520
Eighteenmile Creek Site No. 2	6.97	561.2	11.0	7.9	138	830
Eighteenmile Creek Site No. 3	7.08	540.1	7.87	7.1	131	791
Landfill Well No. 1 (22' Deep)	7.63	1,938.2	29.7	1.8	856	3,270
Landfill Well No. 2 (23' Deep)	9.55	776.4	19.5	6.1	236	1,300
Landfill Well No. 3 (90' Deep) *	2.56	36,898.	64.6	15.3	13,895	32,800
Landfill Well No. 4 (90' Deep) *	4.12	30,356.4	97.3	--	11,996	28,800
Landfill Swale	4.72	9,121. .	7.2	0.1	3,498	10,360

*Wells 3 and 4 are transposed on Figures 2 and 3.



PORTION OF
BECHTEL'S HYDROGEOLOGIC STUDY
OF DANIELEWICZ RTE (Feb. '82)

ATTACHMENT 7.2-1 (Continued)

BORING LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.		
				Somerset Railroad		14818	1 of 1	D-66		
SITE		COORDINATES				ANGLE FROM HORIZ.		BEARING		
Van De Mark		N 1,160,859 E 468,567				90°		—		
BEGIN	COMPLETED	DRILLER		DRILL MAKE AND MODEL		HOLE SIZE (INCHES)	OVERBURDEN (FT.)	ROCK (FT.)		
10/26/81	10/27/81	J. Genovese/Empire		CME 45B		NX/5-7/8	11.0	24.5		
CORE RECOVERY (FT./%)		CORE BOXES	SAMPLES	EL. TOP OF CASING (FT.)	GROUND EL. (FT.)	DEPTH/EL. GROUND WATER (FT.)		DEPTH/EL. TOP OF ROCK (FT.)		
23.5/86		2	—	466.33	464.4	25.6/438.8		11.0/453.4		
SAMPLE HAMMER WEIGHT/FALL		CASING LEFT IN HOLE: DIA./LENGTH			LOGGED BY:					
—		—			C. F. Wall					
SAMPLER TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLER RECOVERY	SAMPLER BLOWS	PENETRATION BLOWS	ELEVATION (FT.)	DEPTH (FT.)	UNIFIED SOIL CLASSIFICATION	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				RQD	464.4				0'-11.0'	Drilling with NX split-tube core barrel to 35.5 ft. Reamed with 5-7/8 roller-rock bit to 38.0 ft. Installed 3" flush-joint casing to 13.0 ft.
				Z					Residual Soil	
NX	3.8	2.3	61	0	0					
3" CASING										
NX	3.6	3.5	97	2.0	56				11.0'-31.7' GRIMSBY FM. SANDSTONE and interbedded SHALE: dk. reddish brown to pale green, v. hard to med. hard (sds) and mod. hard to v. soft (shale), fresh to completely weathered, fossiliferous, banded, fine grained to microcrystalline.	
									Bed. Sep. @13.1, 13.3, 13.4, 13.6, 16.9, 17.4, 17.6, 17.7, 18.2, 20.0, 20.1, 20.2, 31.1, 31.7 (weathering staining).	
NX	10.0	7.7	77	6.4	64				Vertical joints @ 31.1-32.9 (rough surface, uneven, no staining), 34.3-34.8 (uneven, rough surface, no staining, 2 joints), 35.25-35.35 (gray clay filled).	
END BOX 1										
NX	9.9	10.0	101	4.0	40				31.7'-35.5' SHALE w/interbedded limestone & calcareous SANDSTONE: dk. reddish brown to grayish green, v. hard to med. hard, sl. to severely weathered.	Boring completed at 35.5 ft. Completed as observation well. See well completion report for construction details.
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER					SITE 428.9	Van De Mark			HOLE NO. D-66	

BORING LOG						PROJECT Somerset Railroad		JOB NO. 14818	SHEET NO. 1 OF 5	HOLE NO. D-67		
SITE Van De Mark			COORDINATES N 1,160,874 E 468,575				ANGLE FROM HORIZ. 90°		BEARING —			
BEGIN 10/25/81	COMPLETED 10/26/81	DRILLER M. Gaudy/Empire		DRILL MAKE AND MODEL CME 45B		HOLE SIZE (INCHES) NX/6	OVERBURDEN (FT.) 9.5	ROCK (FT.) 90.5	TOTAL DEPTH (FT.) 100.0			
CORE RECOVERY (FT./%) 82.8/93		CORE BOXES 6	SAMPLES 1	EL. TOP OF CASING (FT.) 465.91	GROUND EL. (FT.) 462.9	DEPTH/EL. GROUND WATER (FT.) 50.1/412.8		DEPTH/EL. TOP OF ROCK (FT.) 9.5/453.4				
SAMPLE HAMMER WEIGHT/FALL 140#/30"			CASING LEFT IN HOLE: DIA./LENGTH —			LOGGED BY: J. C. Isham/S. Balone/D. Middleton						
SAMPLE TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLER RECOVERY CORE RECOVERY	SAMPLER BLOWS "H" PERCENT CORE RECOVERY	PENETRATION BLOWS			ELEVATION (FT.)	DEPTH-FT.	UNIFIED SOIL CLASSIFICATION	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				1ST "	2ND "	3RD "						
							462.9					
SS	24"	4"	7	3	3	4					0'-9.5' FILL, v. fine to coarse SAND, some plastic (fill), some plastic silty CLAY, trace gravel.	Odor similar to methane during soil sampling.
SS	24"	4"	10	4	5	5						
SS	24"	5"	10	2	4	6		5				
SS	24"	4"	35	7	27	8						
SS	24"		120+	47	70	50/0"	453.4					
NX	2.5'	1.0	40	REC.	RQD%			10	R	UN	9.5'-32' GRIMSBY FM. SANDSTONE w/in-	
NX CASING									1		terbedded SHALE, dark red-brown, yellow-brown, and pale green, shale is soft,	
NX	5.0	4.85	97			Packer Test #8		15	R	UN	Horiz. fractures: 13.95 (clay-filled), 14.4, 14.6 (clay filled), 15.42, 18.1	
						1.27 x 10 ⁻⁶ cm/sec			2		Fractures: 14.85(20°), 15.2(10°), 15.8-16.3, 16.85-17.35, 17.8-18.3 vertical, FeO stain.	
NX	1.2'	1.2'	100	86				20	R	UN	Red-brown to light gray silty banded fine-grained SS, weathered, med. hard to hard, well indurated, common shaly partings at 0° dip, otherwise irregular bedding, near horizontal. SS varies to med. grained 18.52'-18.68'.	
NX	6.9'	6.85	99	91				25	R	UN	19.1': 1/2" long lenticular storm clasts, irregular bedding.	
END BOX 1						Packer Test #7			4		18.5'-19.7': Thinly interbedded (0°) gray v. f. sandy to silty shale.	
						3.7 x 10 ⁻⁶ cm/sec			5			
NX	10.0	9.81	98	57	2			30	R	UN	32.0-46.4' POWER GLEN FM. Red-brn. laminated SHALE, med. soft, fresh to slightly weathered, horizontal bedding.	
											Thinly interbedded red-brown to light gray f. to med. SS and green-gray soft SHALE. SS is med. soft to med. hard, mod. well indurated; flame structures and boudin shaped lenses present. Bedding varies 0° to 5°.	
											Light red-brn. f. grn. SS, faint cross-bedding.	
								35				

SS = SPLIT SPOON; ST = SHELBY TUBE;
 D = DENNISON, P = PITCHER; O = OTHER

SITE
Van De Mark

HOLE NO.
D-67

BORING LOG

PROJECT

Somerset Railroad

JOB NO.

14818

SHEET NO.

3 of 5

HOLE NO. 1

D-67

SAMPLER TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLER RECOVERY CORE RECOVERY	SAMPLER BLOWS PER CENT CORE RECOVERY	PENETRATION BLOWS			ELEVATION (FT.)	DEPTH-FT.	UNIFIED SOIL CLASSIFICATION	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				1ST 6"	2ND 6"	3RD 6"						
NX	See Sheet 2.						387.9				61.0'-100' WHIRLPOOL FM (cont.)	
NX	10.0	9.78	98	56	RQD 2 2	Packer Test #2 3.7 x 10 ⁻⁶ cm/sec		80		RUN	Boring completed to 100'. Boring completed as observation well. See well completion report for construction details.	
END BOX 5						Packer Test #1 3.7 x 10 ⁻⁶ cm/sec		85			Fractures 18.4 0° mod. weath. irregular smooth. 18.43 0° tight thin gray clayey silt coating. 18.52 0° weath. open 1/16", mustard-yellow discoloration, smooth. 18.58-18.68: (4) 0° bedding plane partings, weath., tight, smooth, flat, 1/16" thick shaly layers @ partings. 18.74 0°, tight, hi. weath., mustard-ylw. discoloration. 18.96 0°, open 1/16", hi. weath., gray shaly coating. 19.02: 5°, tight, rough, hi. weath. 19.58: 0°, weath., open 1/16" 19.7: 0°, weath., open > 1/16" 19.71-19.73: (3) 0°, weath., tight, smooth. 21.27': 5°, sli. weath., open 1/16", rough 23.15: 10°, fresh, tight, smooth. 26.03: 0°, fresh, closed, rough. 26.0'-26.4': 90°, fresh, closed. 26.65': 50°, sli. weath., tight, smooth. 26.87: 40°, tight, weath., rough. 27.28: 20°, open < 1/16", weath., rough. 28.0: 5°, sli. weath., open 1/4", irregular 28.56: 0°, fresh, tight to open 1/16". 28.78: 5°, tight, sli. weath. 29.10: 0°, weath., open < 1/16". 29.17: 0°, weath., open < 1/16". 29.30: 0°, closed, sli. weath. 29.84: 20° tight, sli. weath. 29.84-30.2: 90°, fresh, closed. 30.0: 0°, closed, fresh (mech. break). 30.2: 0°, sli. weath., open 1/16". 30.29: 0°, sli. weath., open 1/16" to 1/4". 30.4: 10° weath., open < 1/16". 30.52: 50°, weath., open 1/16" to 1/4". 30.52-30.9: 90°, open < 1/16", calcite coated, sli. weath. 30.9: 0°, fresh, smooth, spun core. 31.0: 35°, tight, fresh, smooth. 31.17: 15°, tight, fresh, smooth. 31.32: 5°, open 1/16"-1/4", fresh, smooth. 32.04: 0°, fresh, tight to open 1/16", smooth. 32.15: 0° fresh, tight to open 1/16", smooth. 32.27: 0°, fresh, tight to open 1/16", smooth. 32.57: 5°, fresh, tight, smooth. 33.09: 0°, fresh, closed, smooth. 33.24: 5°, tight, thin weath. calcite. 33.44: 0°, fresh, closed, smooth. 33.68: 0°, fresh, open 1/16-1/4, smooth.	
NX	10.0	8.70	87	64				90		RUN		
NX	3.6	1.73	38	48				95		RUN		
END BOX 6					B.O.H.	100.0'		100			Driller reports he left 1.9' of core in hole on last run of hole. Boring reamed to 6" diameter following coring.	

SS = SPLIT SPOON; ST = SHELBY TUBE;
D = DENNISON; P = PITCHER; O = OTHER

SITE

Van De Mark

HOLE NO.

D-67



BORING LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.				
				Somerset Railroad		14818	4 of 5	D-67				
SAMPLER TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLER RECOVERY CORE RECOVERY	SAMPLER BLOWS PERCENT CORE RECOVERY	PENETRATION BLOWS			ELEVATION (FT.)	DEPTH-FT	UNIFIED SOIL CLASSIFICATION	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				1ST 8"	2ND 8"	3RD 8"						
											34.07: 0°, fresh, tight, smooth. 34.41: 0°, fresh, tight, smooth. 34.54: 0°, fresh, open 1/16", smooth. 35.1: 0°, fresh, closed, smooth. 35.23: 0°, fresh, tight, irregular. 35.84: 0°, fresh, tight, smooth. 36.16: 0°, fresh, open 1/16", smooth. 36.52: 0°, fresh, open 1/16". Unless otherwise noted, the following fractures dip 0° to 5° & are tight to open 1/16": 36.62, 36.8, 36.9, 37.1, 37.25, 37.55, 37.8, 37.95, 38.15, 38.3, 38.5, 38.85, 39.0, 39.15, 39.63, 39.7, 39.9, 40.27, 40.4, 40.95, 41.4, 41.47, 41.6, 41.9, 42.13: 0°, 1/4" clay and shale frag's. 42.33, 42.53, 42.6: 1/2" shale frag's., 0°. 42.85, 43.82, 44.0, 44.35, 44.5, 45.35, 45.9, 47.65, 47.93. 47.93 to 48.88: 90°, tight, ylw. weathering, 48.88, 48.95, 49.10, 49.78, 50.23, 51.14, 51.52, 52.5, 52.8, 52.88, 53.07, 53.1-53.4: 90°, closed. 53.25, 53.55, 53.67, 54.20, 54.78, 54.8, 55.14. 55.34: < 1/4" clay & shale frag's., 0° 55.98, 56.32.	

SS = SPLIT SPOON; ST = SHELBY TUBE;
D = DENNISON; P = PITCHER; O = OTHER

SITE
Van De

HOLE NO.
D-67



BORING LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.				
				Somerset Railroad		14818	5 of 5	D-67				
SAMPLER TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLER RECOVERY CORE RECOVERY	SAMPLER BLOWS PERCENT CORE RECOVERY	PENETRATION BLOWS			ELEVATION (FT.)	DEPTH-FT.	UNIFIED SOIL CLASSIFICATION	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				1ST 8"	2ND 8"	3RD 8"						
											Unless noted otherwise, all fractures listed below are near horizontal, tight, and fresh. 56.55, 57.3, 57.55, 58.06, 58.1, 60.1, 61.0, 61.23, 61.3 (crushed zone from coring to 61.4), 61.54, 61.9, 62.12: 0°, 2" zone of clay & weathered shale, 62.45, 62.74. 62.83 to 62.92: 0°, crushed zone from drilling. 63.14: 20°, tight. 63.19-63.3: crushed from coring, 63.48. 64.1: 20°, tight. 64.48: 30°, tight. 64.89: 10°, tight, shale partings. 65.21: 0°, 1/2" clay seam. 65.68: irregular fract., w/crushed frag's. 65.9, 66.07, 66.5, 67.02, 67.07, 67.07-67.17 - zone of crushed frag's. from coring 67.65, 67.7, 67.73, 68.02 - zone of crushed core 1/4" thick 68.45, 68.52, 69.3, 74.62 (mechanical), 75.05, 75.58, 76.44, 76.6: 40°, fresh, poor fit. 76.72, 77.3, 77.53, 77.61, 77.7, 77.86, 77.99, 78.12, 78.32, 78.33, 78.45, 78.58, 78.81. 78.96: 45°, fresh, poor fit. 79.1: 30°, fresh. 79.25-79.3: 1/2" zone of crushed core. 79.49: 50°, fresh. 79.78, 79.92, 81.15, 81.54, 82.32, 82.63, 84.23, 84.25, 84.43, 84.52, 84.65, 84.86, 85.1, 85.21, 85.28, 85.41, 85.51, 86.1, 87.64, 87.76, 87.99. 88.27: 40°, tight. 88.52, 88.68, 89.31, 89.5, 89.45: 30°, tight. 90.4: 0°, crushed core, poor fit. 90.63: 20°, tight. 91.2: 15°, tight. 91.8, 91.95, 92.1, 92.13, 92.79, 92.94, 93.05, 94.11.	

SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON, P = PITCHER, O = OTHER	SITE Van De Mark	HOLE NO. D-67
---	---------------------	------------------



BORING LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.									
				Somerset Railroad		14818	1 OF 2	D-68A									
SITE			COORDINATES			ANGLE FROM HORIZ.		BEARING									
Van De Mark			N 1,160,838 E 468,555			90°		—									
BEGIN	COMPLETED	DRILLER	DRILL MAKE AND MODEL		HOLE SIZE (INCHES)	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH (FT.)									
10/24/81	10/26/81	S. Gaudy/Empire	CME 45B		NX/3	10.0	44.2	54.2									
CORE RECOVERY (FT./%)		CORE BOXES	SAMPLES	EL. TOP OF CASING (FT.)	GROUND EL. (FT.)	DEPTH/EL. GROUND WATER (FT.)	DEPTH/EL. TOP OF ROCK (FT.)										
39.8/97-		3	7	467.55	465.2	47.4/417.8	10.0/455.2										
SAMPLE HAMMER WEIGHT/FALL			CASING LEFT IN HOLE, DIA./LENGTH			LOGGED BY:											
140#/30"			—			J. C. Isham/C. F. Wall											
SAMPLER TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH (CORE BOX)	SAMPLER RECOVERY (%)	SAMPLE BLOWS "N"	PENETRATION BLOWS				ELEVATION (FT.)	DEPTH (FT.)	UNIFIED SOIL CLASSIFICATION	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.				
				1st	2nd	3rd	4th										
SS 2"	2.0'	2.0'	10 1	3	4	6		465.2			1	0.0'-10.0' Fill.	8" PVC surface casing installed to a depth of 12.5 ft. Water used as a drilling fluid.				
SS 2"	2.0'	0	5 3	2	2	3					2	Dk. reddish brown, mixture of gravel, clay & black plastic industrial waste.					
SS 2"	2.0'	1.0'	6 2	3	2	4					3						
SS 2"	2.0'	1.5'	58 40	10	41	17					4						
SS 2"	2.0'		43 57	42	53	90					5						
SS 2"	1.3'		150	23	50	100/4"		455.2	10		6	Top of weathered rock.					
10" AUGER	.5'	0		104/6							7	Top of unweathered rock.					
NX 3.4	3.4	100		RQD % 32							8	10.0'-29.0' GRIMSBY FM.					
NX 1.6	1.6	100		36							9	Banded & mottled dark reddish brown & pale green interbedded hard sandstone & soft shale.					
NX 8.4	7.3	87		53							10	Horizontal fractures: 13.7, 13.75, 13.8, 14.15, 14.25, 14.5, 14.55, 14.8, some with FeO stains.					
											11	Fracture zone 15.1-15.35.					
											12	Vertical fracture 15.7-16.4.					
											13	Horizontal fractures: 16.45, 16.5, 16.6, 16.9, 17.5, 17.6, 17.7, 17.75, 18.7, 18.8, 18.85, 19.3, 20.05, 20.3, 20.4, some with FeO stains.					
											14	Vertical fracture 18.85-19.3, FeO.					
											15	Horizontal frac. 20.55, 20.65, 21.2-21.4, 21.9-22.0, 21.3, 22.15, 22.6, 23.0, 23.4, 23.75.					
											16	Vert. frac. 20.65-21.2.					
											17	Basal GRIMSBY FM. 21.45-29.0.					
											18						
											19	Horizontal fractures: 26.95, 27.05.					
											20	Shale bed 28-28.25.					
END BOX 1								436.2	30		21	29.0'-52.4' POWER GLEN FM.					
NX 8.6	7.85	91		58							22	banded & mottled dark reddish brown, pale green & gray, interbedded sandstone and shale, 30° fracture at 33.5.					
											23	Horizontal fractures: 30.7, 31.1, 31.5 to 32.2, 32.05, 33.0, 33.35, 34.05, 34.75.					
								430.2	35		24						
SS - SPLIT SPOON; ST - SHELBY TUBE; D - DENNISON; P - PITCHER; O - OTHER												SITE		Van De Mark		HOLE NO. D-68A	



BORING LOG							PROJECT	JOB NO.	SHEET NO.	HOLE NO.		
							Somerset Railroad	14818	2 of 2	D-68A		
SAMPLER TYPE AND DIAMETER	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLER RECOVERY CORE RECOVERY	SAMPLE BLOWS "N"	PENETRATION BLOWS			ELEVATION (FT.)	DEPTH-FT	UNIFIED SOIL CLASSIFICATION	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.
				1ST 6"	2ND 6"	3RD 6"						
							430.2					
NX	5.0	5.0	110	RQD Z 18						R U N 5	29.0'-52.4' POWER GLEN FM. (cont.) Vert. joints 30.4-30.9, 31.4-31.8, 32.3-32.5, 34.9-35.5. 35.5-52.4: interbedded LS, SH, calc. SS, med. soft to med. hard, med. to dark gray, slightly to moderately weathered.	
NX	5.0	4.7	96	36				40		R U N 6	Horiz. joints: 36.5, 39.4. Vert. joints: 37.9-38.1, 39.8-40.0, 51.2-51.4.	
END BOX 2 NX	4.4	4.95	113	85				45		R U N 7		
NX	5.0	5.0	100	69				50		R U N 8		
							412.8				52.4'-54.2' WHIRLPOOL FM. SANDSTONE, lt. gray to white, very hard, fresh to slt. weath., f. grained, occ. shale partings. Vert. fract.: 52.8- 53.1, 53.5-54.0.	
END BOX 3							411.0	55			Bottom of boring: 54.2 ft. Boring completed as observation well. See well completion report for construction details.	Boring reamed to 6" diam. to 58.0'.

SS - SPLIT SPOON; ST - SHELBY TUBE;
D - DENNISON; P - PITCHER; O - OTHER

SITE
Van De Mark

HOLE NO.
D-68A



BORING LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.					
Norton				Somerset Railroad		14818	1 OF 1	D-69					
SITE		COORDINATES				ANGLE FROM HORIZ.		BEARING					
		N 1,160,836 E 468,601				90°		---					
SECUR.	COMPLETED	DRILLER	DRILL MAKE AND MODEL	HOLE SIZE (INCHES)	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH (FT.)						
10/28/81	10/28/81	J. Genovese/Empire	CME 45B	6	12.7	3.7	16.4						
CORE RECOVERY (FT./%)		CORE BOXES	SAMPLES	EL. TOP OF CASING (FT.)	GROUND EL. (FT.)	DEPTH/EL. GROUND WATER (FT.)	DEPTH/EL. TOP OF ROCK (FT.)						
3.7/74		1	1	466.11	464.4	5.8/458.6	12.7/451.7						
SAMPLE HAMMER WEIGHT/FALL			CASING LEFT IN HOLE, DIA./LENGTH			LOGGED BY:							
140#/30"			---			C. P. Wall							
SAMPLER TYPE AND DIAPHRAGM	SAMPLER ADVANCE LENGTH CORE RUN	SAMPLER RECOVERY CORE RECOVERY	SAMPLER BLOWS "N"	PENETRATION BLOWS			ELEVATION (FT.)	DEPTH-FT	UNIFIED SOIL CLASSIFICATION	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.	
				1ST 8"	2ND 8"	3RD 8" / 4"							
2" SS	2	0.6	12	6	7	5/4	464.4	0		1	0'-12.7'	Drilling with 5" ID hollow-stem augers to 11.4 Drilling with NX split-tube core barrel to 16.4'. Reaming w/5-7/8 roller-rock bit to 18.0'.	
SS	2	0.9	10	2	3	7/9				2	Fill: tan to br. to bl. to creme silty CLAY and clayey SAND and plastic, metal fibers, loose to med. dense to v. dense, wet, tr. gravel, occasional orange staining.		
SS	2	0.7	8	6	4	4/2		5		3			
SS	2	0	12	5	2	10/12				4			
SS	2	0.9	52	50	37	15/30		10		5			
SS	1.4	0.7	70	14	24	46/.4				6			
NX	5.0	3.7	74	RDQ	Z		451.7	15		1	12.7'-16.4' GRIMSBY FM. SANDSTONE w/interbedded SHALE: dk. reddish brown to pale green, v. hard to med. hard to soft, sl. to completely weathered, fine-grained.		
							448.0'	20			Bed. Sep. @ 13.2 (clay), 13.7 (sl. orange stain.), 13.9 (tr. clay), 14.1 (0.01 clay), 14.3 (0.01 clay), 14.5 (blueish-yellowish green clay 0.05' thick), 14.9 (0.04' same as @ 14.5) 16.0-16.1 (shale bed w/yellow-green clay coating). Vertical joint @ 12.8-13.2 (rough surface, v. sl. orange staining), 14.9-15.0 (rough surface, no staining).		
											Bottom of boring @ 16.4 ft. Boring completed as observation well See well completion report for construction details.		
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER; O = OTHER											SITE Norton		HOLE NO. D-69

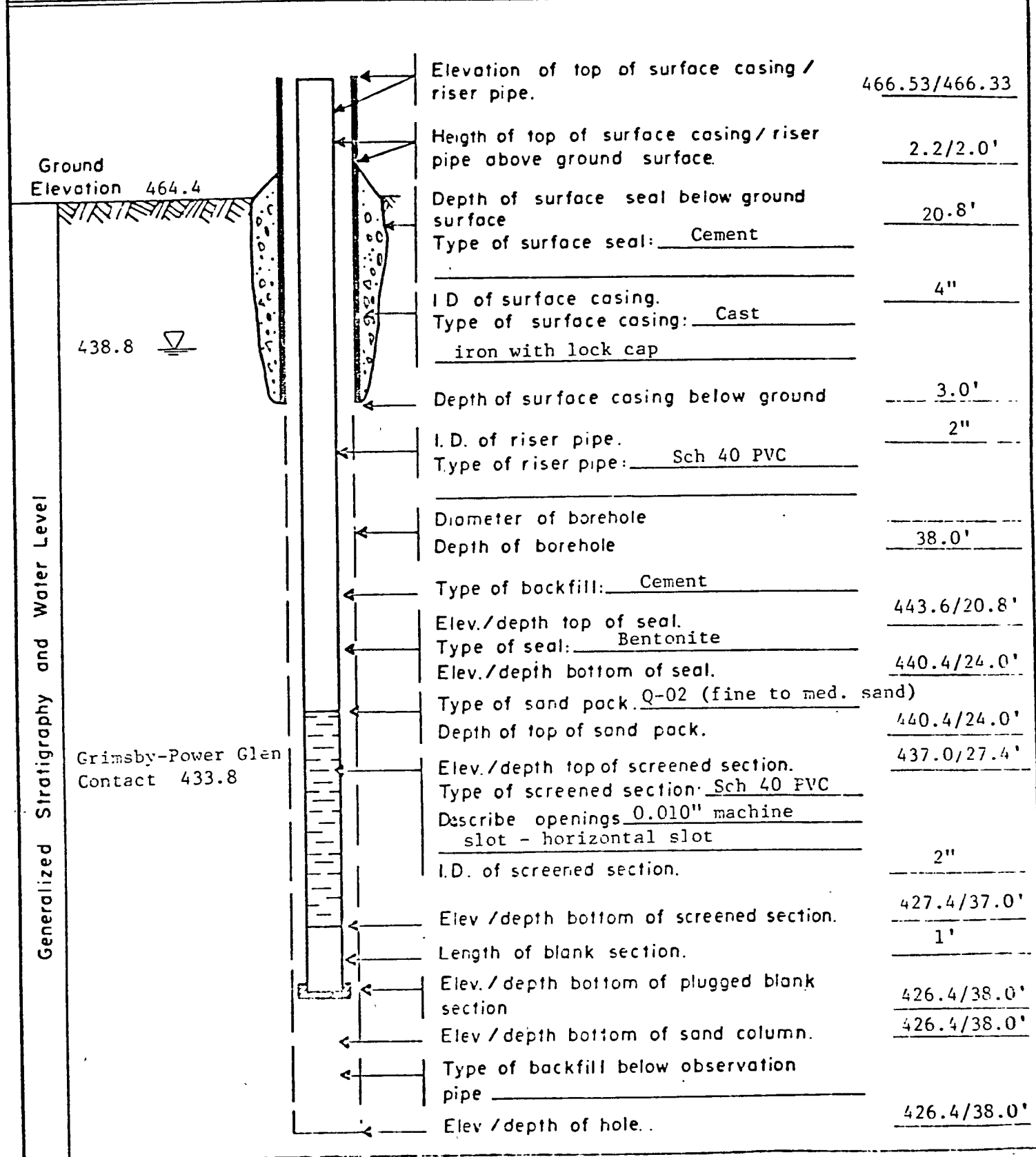


BORING LOG				PROJECT		JOB NO.	SHEET NO.	HOLE NO.												
Norton				N 1,160,737 E 468,896		14818	1 OF 1	D-70												
SITE				COORDINATES		ANGLE FROM HORIZ.		BEARING												
Norton				N 1,160,737 E 468,896		90°		—												
BEGIN	COMPLETED	DRILLER	DRILL MAKE AND MODEL		HOLE SIZE (INCHES)	OVERBURDEN (FT.)	ROCK (FT.)	TOTAL DEPTH (FT.)												
10/28/81	10/29/81	Empire	CME 45B		6	14.0	5.0	19.0												
CORE RECOVERY (FT./%)		CORE BOXES, SAMPLES	EL. TOP OF CASING (FT.)	GROUND EL. (FT.)	DEPTH/EL. GROUND WATER (FT.)	DEPTH/EL. TOP OF ROCK (FT.)														
3.9/78		1 7	468.10	466.3	6.7/459.6	14/452.3														
SAMPLE HAMMER WEIGHT/FALL			CASING LEFT IN HOLE, DIA./LENGTH		LOGGED BY:															
140#/30"			—		C. F. Wall/D. Middleton															
SAMPLER TYPE AND DIAMETER	SAMPLER ADVANCE	LENGTH CORE RUN	SAMPLER RECOVERY	CORE RECOVERY	SAMPLE FLOWS	PERCENT CORE RECOVERY	PENETRATION BLOWS			ELEVATION (FT.)	DEPTH-FT.	UNIFIED SOIL CLASSIFICATION	SAMPLE	DESCRIPTION AND CLASSIFICATION	NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC.					
							1ST 6"	2ND 6"	3RD 6"											
2" SS	2	0.7	10	1	3	7/4	466.3						1	0'-14'	Drilling with 5" ID hollow-stem augers to 6.9 ft.					
SS	2	0.2	6	3	3	3/4							2	Fill: dk. reddish brown, loose, moist, v. fine clayey SAND and plastic, metal, carbon rods, tr. med. sand						
SS	2	1.0	40	5	10	30/40							3							
SS	0.9	0.1	—	20	100/A	—							4							
SS	2.0	0.8	8	4	4	4/7							5							
SS	2.0	0.9	29	17	15	14/70							6							
SS	1.5	0.9	79	19	29	50							7							
RX	5.0'	3.9	78	RQD 1.05 21%			452.3							Top of rock. 14.0'-19.0' GRIMSBY FM. Dark red-brown to pale green, fresh to severely weathered, fine grained to microcrystalline, interbedded SANDSTONE, SILTSTONE, and SHALE, shale completely weathered to clay.	Ream with 6" roller rock bit to 19.4'.					
							447.3						1							
														Bottom of boring @ 19.0.	Boring completed as observation well. See well completion reports for construction details.					
SS = SPLIT SPOON; ST = SHELBY TUBE; D = DENNISON; P = PITCHER, O = OTHER															SITE		Norton		HOLE NO. D-70	

GROUND WATER OBSERVATION WELL REPORT 2-1

(Continued)

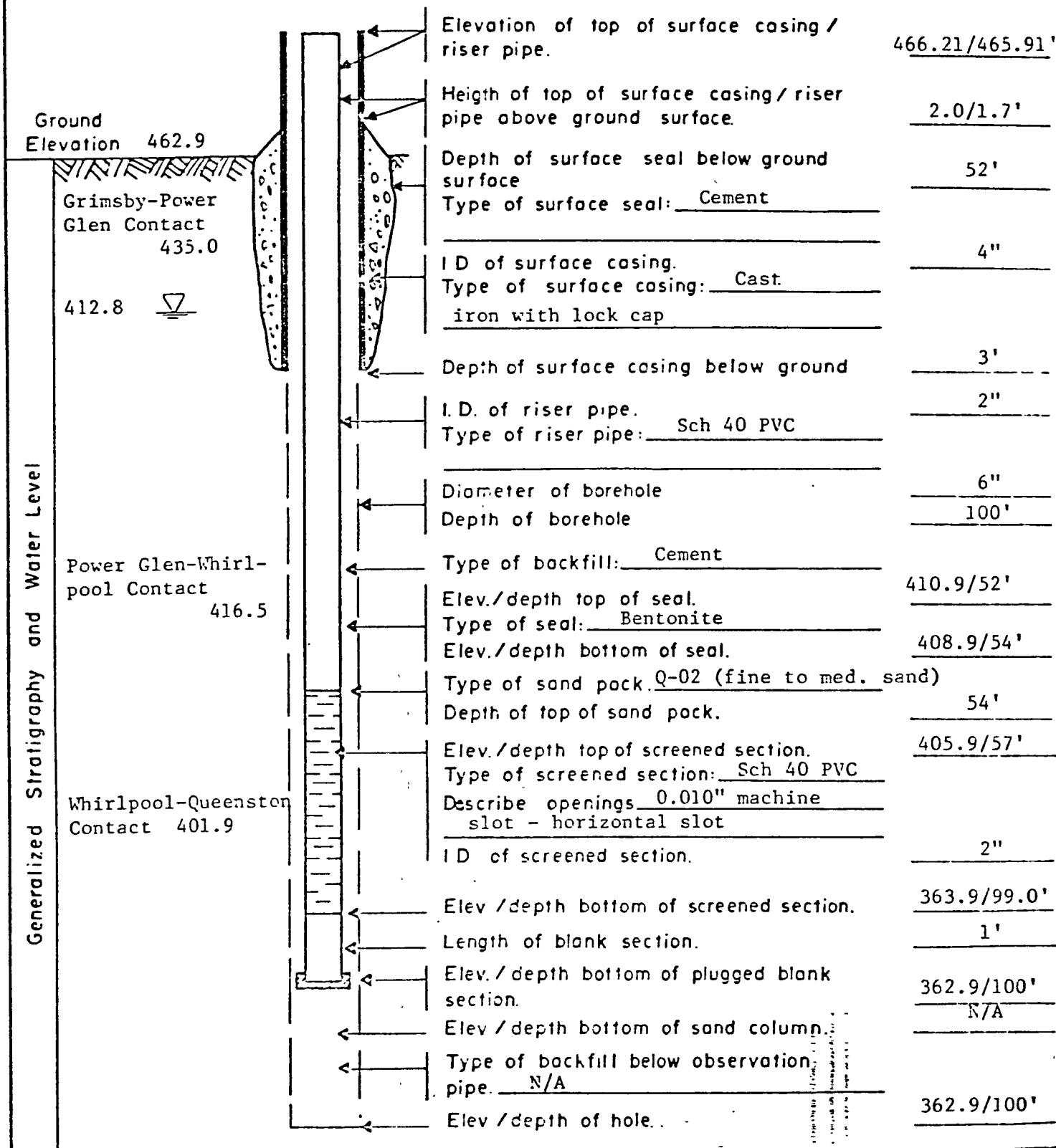
PROJECT	Somerset Railroad - Van De Mark		Page	18	of	23
LOCATION	N1,160,859	E468,567	Well No	D-66		
Date Completed	10/28/81	Original Depth	38.0'			
Inspected By	J. C. Isham	Date	10/28/81			
Checked By		Date				
			Aquifer	Grimsby-		
			Power Glen Contact			
			Elev. Interval	426.4-440.4'		



GROUND WATER OBSERVATION WELL REPORT

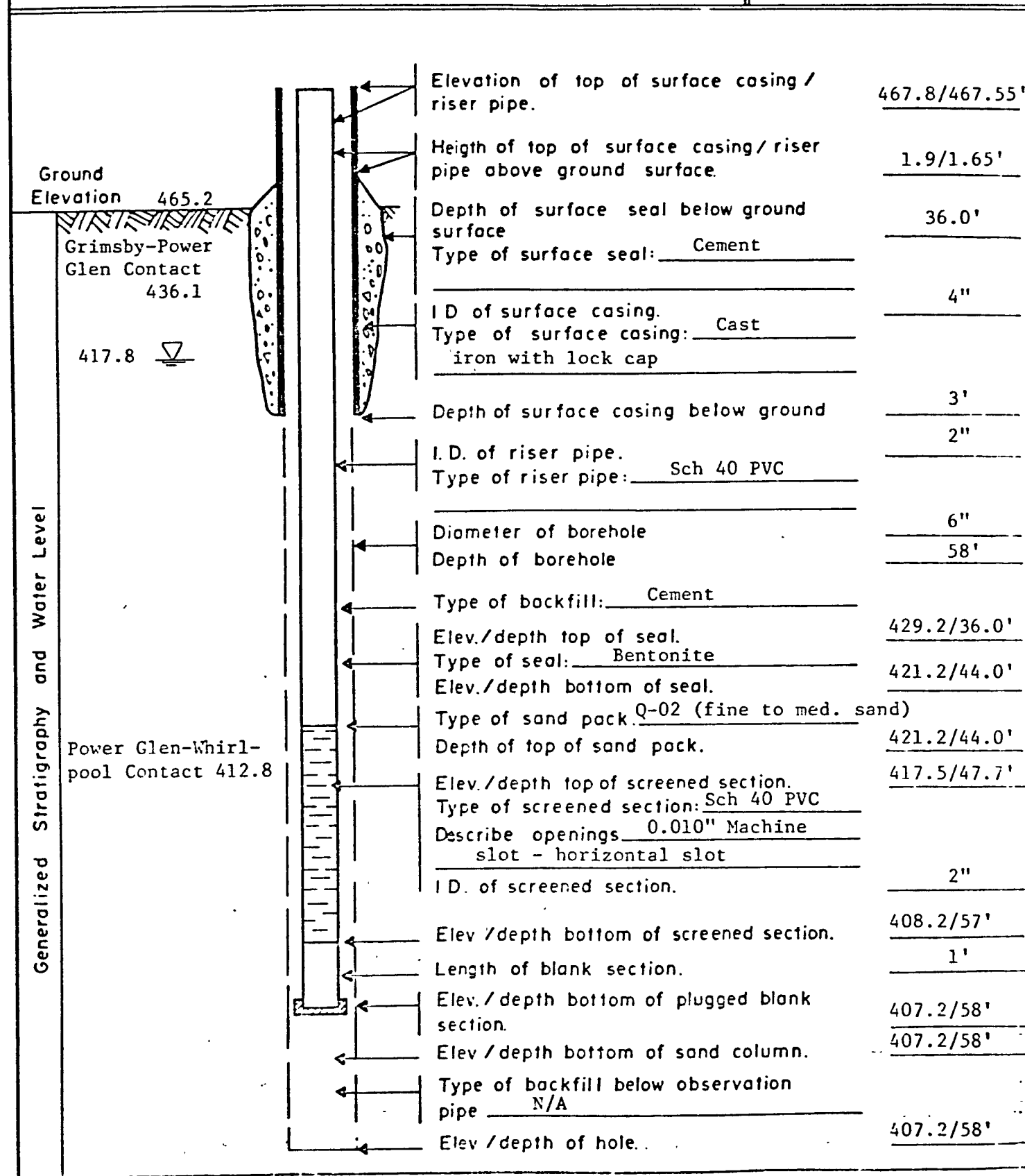
PROJECT Somerset Railroad - Van De Mark
 LOCATION N1,160,874 E468,575
 Date Completed 10/30/81 Original Depth 100'
 Inspected By J. Stone Date 10/30/81
 Checked By _____ Date _____

Page 19 of 23
 Well No. D-67
 Aquifer Whirlpool-
 Queenston Contact
 Elev. Interval 362.9-408.9'



GROUND WATER OBSERVATION WELL REPORT

PROJECT	Somerset Railroad - Van De Mark		Page	20	of	23
LOCATION	N1,160,838	E468,555	Well No.	D-68A		
Date Completed	10/30/81	Original Depth	58'			
Inspected By	D. L. Middleton	Date	10/30/81			
Checked By		Date				
			Aquifer	Power Glen		
			Whirlpool Contact			
			Elev. Interval	407.2-421.2'		



GROUND WATER OBSERVATION WELL REPORT

PROJECT Somerset Railroad - Van De Mark

Page 21 of 23

LOCATION N1,160,836 E468,601

Well No. D-69

Date Completed 10/28/81 Original Depth 18'

Aquifer Grimsby-Soil-

Inspected By C. F. Wall

Date 10/28/81

Landfill

Checked By _____

Date _____

Elev. Interval 446.4-458.4

Ground
Elevation 464.4

Fill: clayey f.
to med. SAND and
multi-colored
plastic, fibers,
metal

458.6

Generalized Stratigraphy and Water Level

454.9

v. fine to fine
clayey SAND

451.7

SANDSTONE:

sl. to com. weath-
ered, w/shale.
interbed and clay
coating.

Elevation of top of surface casing /
riser pipe. 466.56/466.11

Height of top of surface casing / riser
pipe above ground surface. 2.2/1.75'

Depth of surface seal below ground
surface 4.2'

Type of surface seal: Cement

I.D. of surface casing.

Type of surface casing: Cast iron
with lock cap

Depth of surface casing below ground

I.D. of riser pipe.

Type of riser pipe: Sch 40 PVC

Diameter of borehole

Depth of borehole

Type of backfill: Cement

Elev./depth top of seal.

Type of seal: Bentonite

Elev./depth bottom of seal.

Type of sand pack. Q-02 (fine to med. sand)

Depth of top of sand pack.

Elev./depth top of screened section.

Type of screened section: Sch 40 PVC

Describe openings 0.010" machine
slot - horizontal slot

I.D. of screened section.

Elev./depth bottom of screened section.

Length of blank section.

Elev./depth bottom of plugged blank
section.

Elev./depth bottom of sand column.

Type of backfill below observation
pipe. Natural material

Elev /depth of hole.

466.56/466.11

2.2/1.75'

4.2'

4"

3"

2"

10" to 11.4'
6" to 18.0'

18.0'

460.2/4.2'

458.4/6.0'

6.0'

456.65/7.75'

2"

447.25/17.15'

0.25'

447/17.4'

447/17.4'

446.4/18.0'

GROUND WATER BORING REPORT

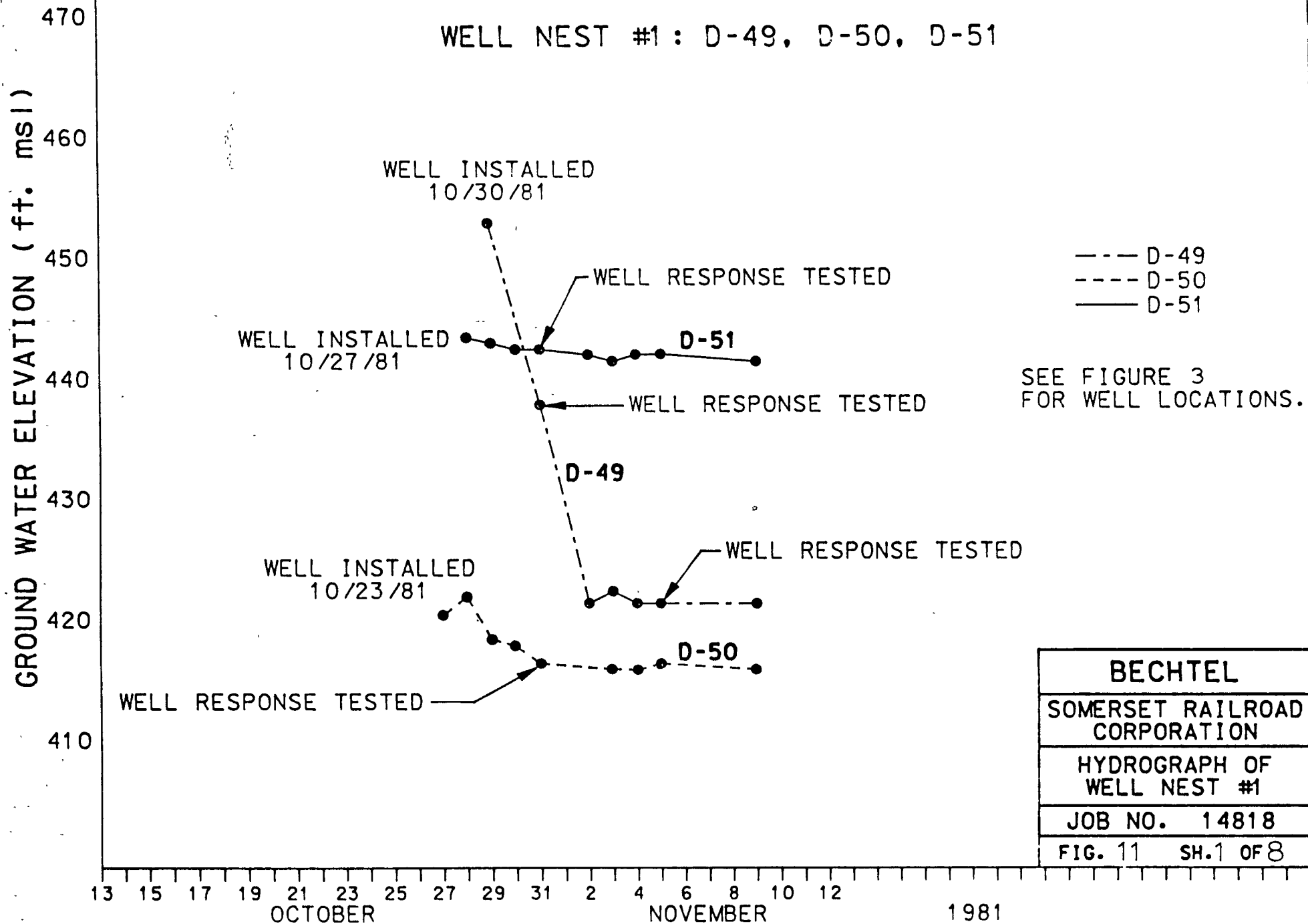
PROJECT	Somerset Railroad - Van De Mark		Page	22	of	23
LOCATION	N1,160,737	E468,696	Well No.	D-70		
Date Completed	10/29/81	Original Depth	19.4'			
Inspected By	J. C. Isham	Date	10/29/81			
Checked By		Date				
			Aquifer	Grimsby-Soil Landfill		
			Elev. Interval	446.9-458.3		

Generalized Stratigraphy and Water Level	Ground Elevation 466.3		Elevation of top of surface casing / riser pipe.	468.35/468.10'
			Height of top of surface casing / riser pipe above ground surface	2.2/1.95'
			Depth of surface seal below ground surface	3.0'
			Type of surface seal: Cement	
			I.D. of surface casing.	4"
			Type of surface casing: Cast iron with lock cap	
			Depth of surface casing below ground	3.0'
			I.D. of riser pipe.	2"
			Type of riser pipe: Sch 80 PVC	
			Diameter of borehole	6"
			Depth of borehole	19.4'
			Type of backfill: Cement	
			Elev./depth top of seal.	461.3/5.0'
			Type of seal: Bentonite	
			Elev./depth bottom of seal.	458.3/8.0'
		Type of sand pack: Q-02 (fine to med. sand)		
		Depth of top of sand pack.	8.0'	
		Elev./depth top of screened section.	456.6/9.7'	
		Type of screened section: Sch 40 PVC		
		Describe openings: 0.010" machine slot - horizontal slot	2"	
		I.D. of screened section.		
		Elev./depth bottom of screened section.	447.2/19.1'	
		Length of blank section.	.3'	
		Elev./depth bottom of plugged blank section.	446.9/19.4'	
		Elev./depth bottom of sand column.	446.9/19.4'	
		Type of backfill below observation pipe.		
		Elev /depth of hole.	446.9/19.4'	

Fill: clayey med. Sand and multi-colored plastic.

456.3 clayey fine grained sand

452.3 siltstone sl. to completely weathered, w/shale interbeds



Attachment 21-2 (Cont.)

GROUND WATER ELEVATION (ft. msl.)

WELL NEST #2: D-52, D-53, D-54

--- D-52
--- D-53
— D-54

SEE FIGURE 3
FOR WELL LOCATIONS.

WELL INSTALLED 10/20/81

RISING HEAD TEST

WELL RESPONSE TESTED

D-53

WELL INSTALLED 10/25/81

WELL INSTALLED 10/29/81

WELL RESPONSE TESTED

D-54

WELL RESPONSE TESTED

BECHTEL

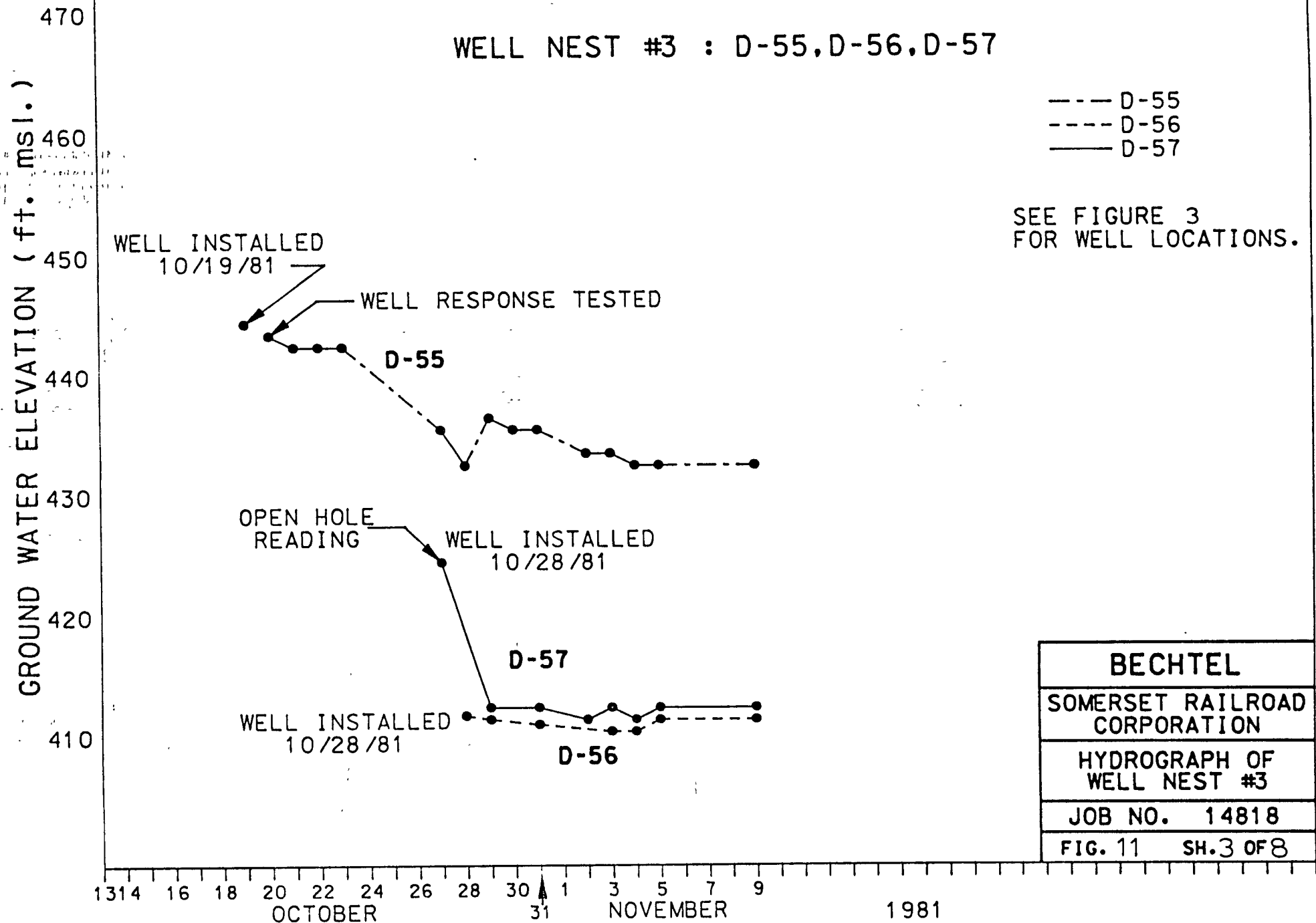
SOMERSET RAILROAD
CORPORATION

HYDROGRAPH OF
WELL NEST #2

JOB NO. 14818

FIG. 11 SH. 2 OF 8

13 15 17 19 21 23 25 27 29 31 2 4 6 8 9
OCTOBER NOVEMBER 1981

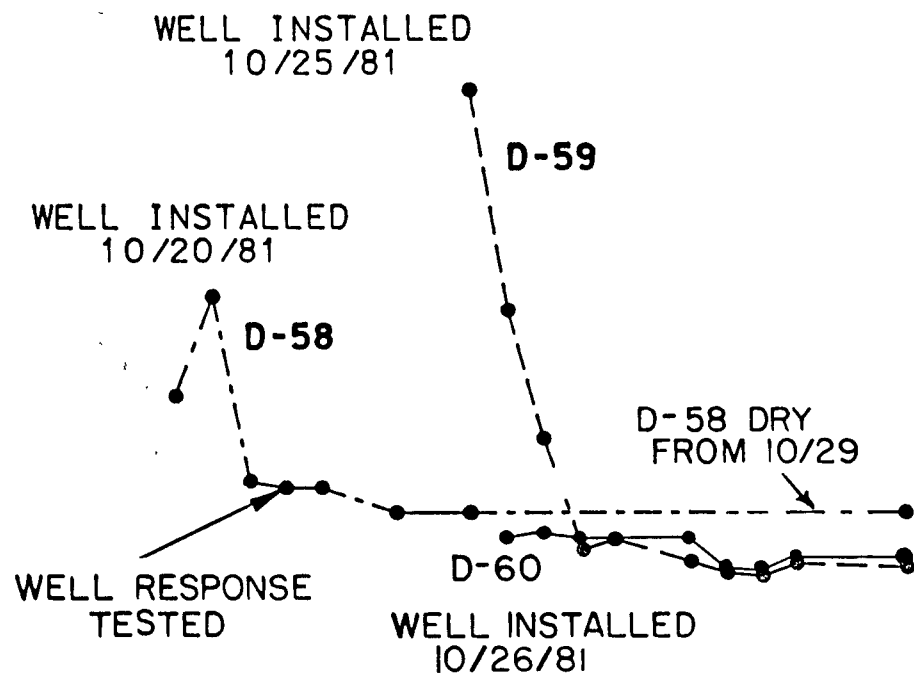


GROUND WATER ELEVATION (ft. msl.)

WELL NEST #4: D-58, D-59, D-60

--- D-58
--- D-59
— D-60

SEE FIGURE 3
FOR WELL LOCATIONS.



BECHTEL
SOMERSET RAILROAD CORPORATION
HYDROGRAPH OF WELL NEST #4
JOB NO. 14818
FIG. 11 SH. 4 OF 8

13 14 16 18 20 22 24 26 28 30 1 3 5 7 9
OCTOBER NOVEMBER 1981

WELL NEST #5: D-61, D-62

GROUND WATER ELEVATION (ft. msl.)

WELL INSTALLED 10/23/81

WELL INSTALLED 10/29/81

---- D-61
— D-62

SEE FIGURE 3
FOR WELL LOCATIONS.

WELL RESPONSE TESTED

WELL RESPONSE TESTED

WELL RESPONSE TESTED

WELL RESPONSE TESTED

D-61

D-62

BECHTEL

SOMERSET RAILROAD
CORPORATION

HYDROGRAPH OF
WELL NEST #5

JOB NO. 14818

FIG. 11 SH. 5 OF 8

13 14 16 18 20 22 24 26 28 30 1 3 5 7 9
OCTOBER NOVEMBER

460
450
440
430
420
410

WELL NEST #6: D-63A, D-64, D-65

GROUND WATER ELEVATION (ft. msl.)

--- D-63A
 --- D-64
 --- D-65

SEE FIGURE 3
 FOR WELL LOCATIONS.

WELL INSTALLED 10/23/81

WELL RESPONSE TESTED

WELL RESPONSE TESTED

D-64

WELL INSTALLED 10/24/81

WELL INSTALLED 10/28/81

WELL RESPONSE TESTED

WELL RESPONSE TESTED

WELL RESPONSE TESTED

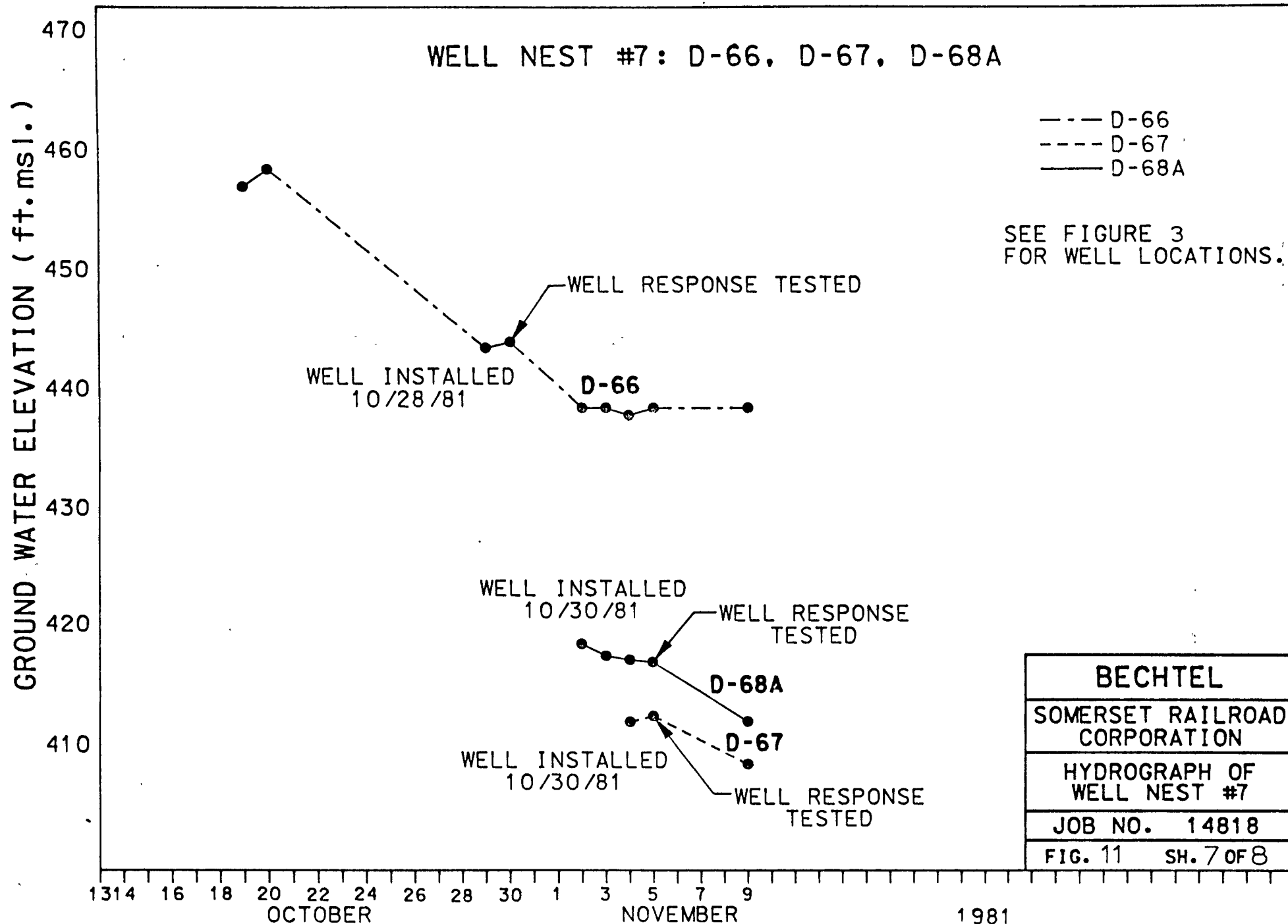
D-65

D-63A

BECHTEL
SOMERSET RAILROAD CORPORATION
HYDROGRAPH OF WELL NEST #6
JOB NO. 14818
FIG. 11 SH. 6 OF 8

13 14 16 18 20 22 24 26 28 30 1 3 5 7 9

OCTOBER NOVEMBER 1981



SEE FIGURE 3
FOR WELL LOCATIONS.

BECHTEL
SOMERSET RAILROAD CORPORATION
HYDROGRAPH OF WELL NEST #7
JOB NO. 14818
FIG. 11 SH. 7 OF 8

GROUND WATER ELEVATION (ft. msl.)

480

470

460

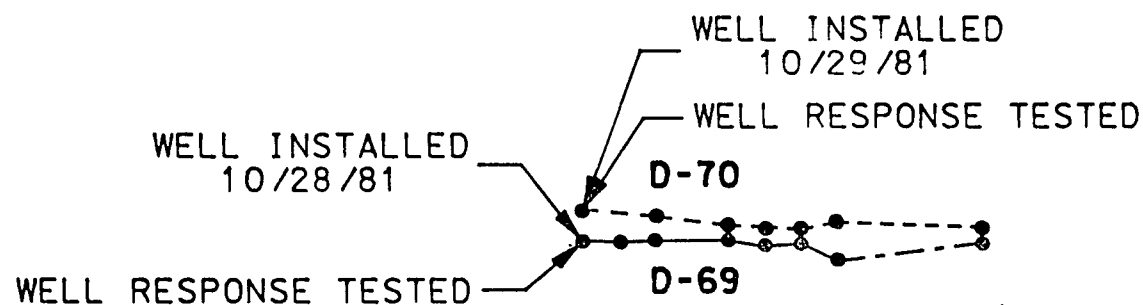
450

440

430

420

WELL NEST #8 : D-69,D-70



--- D-69
---- D-70

SEE FIGURE 3
FOR WELL LOCATIONS.

BECHTEL

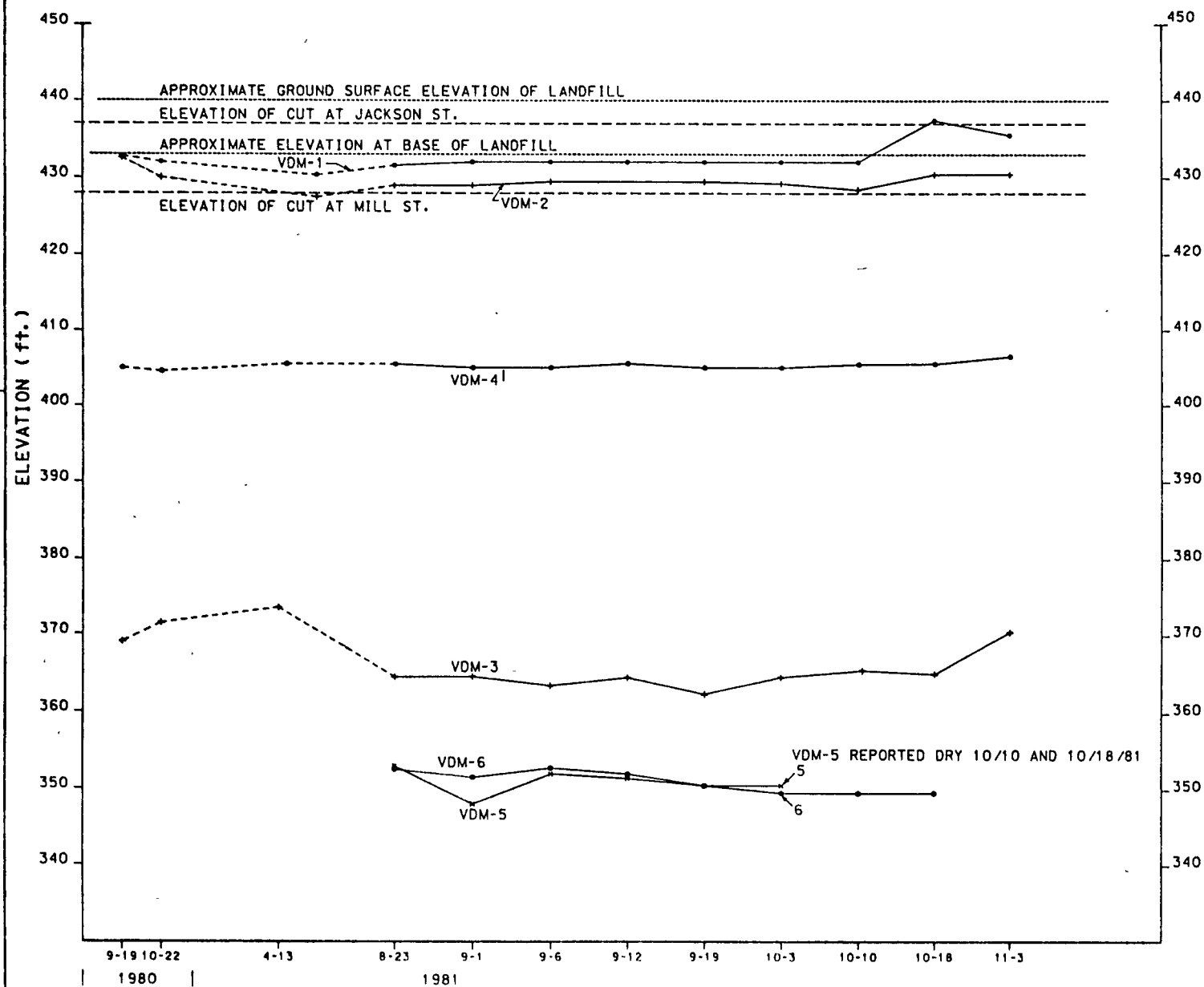
SOMERSET RAILROAD
CORPORATION

HYDROGRAPH OF
WELL NEST #8

JOB NO. 14818

FIG. 11 SH. 8 OF 8

14 16 18 20 22 24 26 28 30 31 1 3 5 7 9 11 13 15 17 19 21
OCTOBER NOVEMBER 1981

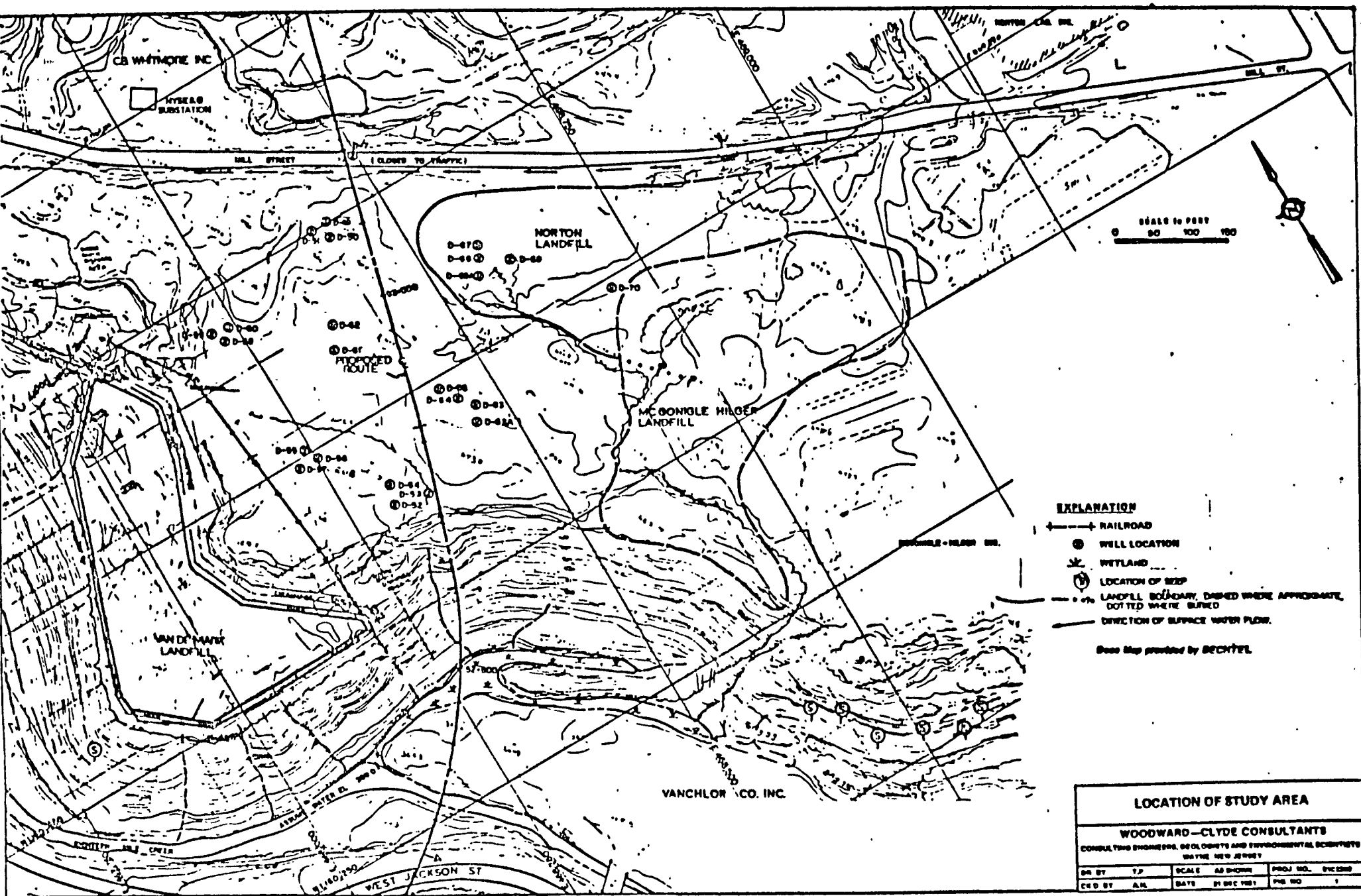


SEE FIGURE 3 FOR WELL LOCATIONS

BECHTEL	
GAITHERSBURG, MARYLAND	
SOMERSET RAILROAD CORPORATION	
HYDROGRAPH OF VAN DE MARK WELLS VDM 1 THROUGH VDM 6	



14818



BECHTEL'S
Hydrogeologic Study
for Danielewicz Route

APPENDIX C-1

CHEMICAL ANALYSES OF GROUND WATER SAMPLES

DATA SHEETS FROM RECRA RESEARCH, INC.

FIRST ROUND ANALYSES

ANALYTICAL RESULTS

BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-49A (11/3/81)	D-49B (11/3/81)	D-50A (11/2/81)	D-50B (11/2/81)
pH (field)	Standard Units	8.85	9.00	11.90	11.90
Specific Conductance (field)	μ mhos/cm	283	305	1,830	1,830
Temperature (field)	°C	11.5	12	12	11.5
Total Organic Carbon	mg/l	1.1	1.3	4.5	5.7
Total Filterable Residue (180°C)	mg/l	290	290	790	750
Chloride	mg/l	20	20	33	33
Total Iron	mg/l	16	8.8	0.91	0.90
Total Recoverable Oil and Grease	mg/l	<5	<5	<5	<5

COMMENTS: Comments pertain to data on all pages of this report. Samples were collected by Recra personnel on 11/2/81 and 11/3/81. The specific date of collection is located under the sample identification.

FOR RECRA RESEARCH, INC.

DATE

R. V. Finn11/11/81

RECRA RESEARCH, INC.
I.D. #81-1000

ANALYTICAL RESULTS
BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-51A (11/3/81)	D-51B (11/3/81)	D-52A (11/2/81)	D-52B (11/2/81)
pH (field)	Standard Units	6.90	7.15	6.35	7.15
Specific Conductance (field)	$\mu\text{mhos/cm}$	295	295	3,000	2,690
Temperature (field)	$^{\circ}\text{C}$	12.5	12	12.5	12
Total Organic Carbon	mg/l	2.4	5.2	8.8	9.6
Total Filterable Residue (180 $^{\circ}\text{C}$)	mg/l	260	260	2,700	2,300
Chloride	mg/l	28	27	1,100	910
Total Iron	mg/l	6.1	14	1.4	0.70
Total Recoverable Oil and Grease	mg/l	<5	<5	30	6

COMMENTS: Analyses were performed according to U.S. Environmental Protection Agency methodologies.

FOR RECRA RESEARCH, INC.

DATE

*R. V. Finn**11/11/81*

RECRA RESEARCH, INC.

I.D. #81-1000

ANALYTICAL RESULTS

BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-53A (11/2/81)	D-53B (11/2/81)	D-54A (11/3/81)	D-54B (11/3/81)
pH (field)	Standard Units	6.65	6.75	9.50	9.65
Specific Conductance (field)	µmhos/cm	353	360	1,480	1,480
Temperature (field)	°C	12	12	11	11
Total Organic Carbon	mg/l	8.1	4.2	2.4	6.4
Total Filterable Residue (180°C)	mg/l	280	340	1,400	1,400
Chloride	mg/l	32	32	290	270
Total Iron	mg/l	3.8	2.5	22	49
Total Recoverable Oil and Grease	mg/l	<5	<5	<5	<5

COMMENTS: pH, Specific Conductance, and Temperature analyses were performed on site by Recra personnel.

FOR RECRA RESEARCH, INC.

DATE



RECRA RESEARCH, INC.

I.D. #81-1000

ANALYTICAL RESULTS
BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-55A (11/2/81)	D-55B (11/2/81)	D-56A (11/3/81)	D-56B (11/3/81)
pH (field)	Standard Units	6.55	6.80	10.45	10.70
Specific Conductance (field)	µmhos/cm	430	430	500	600
Temperature (field)	°C	12	11.5	11	11
Total Organic Carbon	mg/l	4.8	4.7	6.4	5.0
Total Filterable Residue (180°C)	mg/l	370	360	460	480
Chloride	mg/l	37	37	79	79
Total Iron	mg/l	7.1	4.8	5.6	7.2
Total Recoverable Oil and Grease	mg/l	<5	<5	<5	<5

COMMENTS: Values reported as "less than" (<) indicate the working detection limit for the particular sample or parameter.

FOR RECRA RESEARCH, INC.

DATE



RECRA RESEARCH, INC.

I.D. #81-1000

ANALYTICAL RESULTS
BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-57A (11/3/81)	D-57B (11/3/81)	D-59A (11/2/81)	D-59B (11/2/81)
pH (field)	Standard Units	8.10	8.15	8.30	8.25
Specific Conductance (field)	$\mu\text{mhos/cm}$	483	415	249	251
Temperature (field)	$^{\circ}\text{C}$	10	10	10.5	10.5
Total Organic Carbon	mg/l	3.8	3.7	4.5	7.9
Total Filterable Residue (180 $^{\circ}\text{C}$)	mg/l	540	660	220	220
Chloride	mg/l	39	40	22	22
Total Iron	mg/l	9.8	11	2.6	2.8
Total Recoverable Oil and Grease	mg/l	<5	<5	<5	<5

COMMENTS: Refer to pages 1 through 4.

FOR RECRA RESEARCH, INC.

DATE

O. V. Finn
11/11/81



RECRA RESEARCH, INC.

I.D. #81-1000

ANALYTICAL RESULTS

BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-60A (11/2/81)	D-60B (11/2/81)	D-61A (11/3/81)	D-61B (11/3/81)
pH (field)	Standard Units	7.35	7.55	6.65	6.75
Specific Conductance (field)	µmhos/cm	1,680	1,700	420	510
Temperature (field)	°C	10.5	10.5	10	10
Total Organic Carbon	mg/l	8.1	7.3	6.0	10
Total Filterable Residue (180°C)	mg/l	1,700	1,800	410	390
Chloride	mg/l	36	30	36	36
Total Iron	mg/l	16	2.9	2.0	11
Total Recoverable Oil and Grease	mg/l	<5	<5	26	<5

COMMENTS: Refer to pages 1 through 4.

FOR RECRA RESEARCH, INC.

DATE

*R. V. Farn**11/11/81*

RECRA RESEARCH, INC.

I.D. #81-1000

ANALYTICAL RESULTS

BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-62A (11/3/81)	D-62B (11/3/81)	D-63AA (11/3/81)	D-63AB (11/3/81)
pH (field)	Standard Units	9.95	10.25	9.65	9.80
Specific Conductance (field)	$\mu\text{mhos/cm}$	510	505	255	275
Temperature (field)	$^{\circ}\text{C}$	10	10	12	11
Total Organic Carbon	mg/l	3.3	1.5	5.6	5.8
Total Filterable Residue (180 $^{\circ}\text{C}$)	mg/l	550	520	270	270
Chloride	mg/l	19	19	23	24
Total Iron	mg/l	17	18	4.7	3.0
Total Recoverable Oil and Grease	mg/l	6	<5	<5	<5

COMMENTS: Refer to pages 1 through 4.

FOR RECRA RESEARCH, INC.

Q. V. Finn

DATE

11/11/81

RECRA RESEARCH, INC.

I.D. #81-1000

ANALYTICAL RESULTS
BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-64A (11/2/81)	D-64B (11/2/81)	D-65A (11/2/81)	D-65B (11/2/81)
pH (field)	Standard Units	8.20	8.45	7.85	8.30
Specific Conductance (field)	µmhos/cm	244	242	1,290	1,290
Temperature (field)	°C	11.5	13	11.5	11.5
Total Organic Carbon	mg/l	5.7	6.8	4.5	9.5
Total Filterable Residue (180°C)	mg/l	180	170	1,200	1,100
Chloride	mg/l	24	23	37	37
Total Iron	mg/l	1.8	21	4.8	3.3
Total Recoverable Oil and Grease	mg/l	8	<5	<5	<5

COMMENTS: Refer to pages 1 through 4.

FOR RECRA RESEARCH, INC.

DATE

*R. V. Finner**11/11/81*

RECRA RESEARCH, INC.

I.D. #81-1000

ANALYTICAL RESULTS

BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-66A (11/3/81)	D-66B (11/3/81)	D-67A (11/3/81)	D-67B (11/3/81)
pH (field)	Standard Units	7.50	7.45	10.65	10.75
Specific Conductance (field)	μ mhos/cm	1,040	1,000	540	530
Temperature (field)	$^{\circ}$ C	13	12.5	13	12.5
Total Organic Carbon	mg/l	4.0	4.4	3.2	2.0
Total Filterable Residue (180 $^{\circ}$ C)	mg/l	860	830	410	410
Chloride	mg/l	200	190	33	33
Total Iron	mg/l	8.0	1.6	3.1	3.5
Total Recoverable Oil and Grease	mg/l	<5	<5	<5	15

COMMENTS: Refer to pages 1 through 4.

FOR RECRA RESEARCH, INC.

DATE

*D. V. Fain**11/11/81*

RECRA RESEARCH, INC.

I.D. #81-1000

ANALYTICAL RESULTS

BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)			
		D-68A (11/3/81)	D-68B (11/3/81)	D-69A (11/3/81)	D-69B (11/3/81)
pH (field)	Standard Units	8.75	8.95	6.70	6.80
Specific Conductance (field)	$\mu\text{mhos/cm}$	255	258	800	780
Temperature (field)	$^{\circ}\text{C}$	12	12	14	14
Total Organic Carbon	mg/l	1.8	2.5	6.8	8.7
Total Filterable Residue (180 $^{\circ}\text{C}$)	mg/l	230	240	670	730
Chloride	mg/l	19	20	29	29
Total Iron	mg/l	8.4	6.7	7.4	89
Total Recoverable Oil and Grease	mg/l	<5	<5	14	<5

COMMENTS: Refer to pages 1 through 4.

FOR RECRA RESEARCH, INC.

Q. V. Finn

DATE

11/11/81

RECRA RESEARCH, INC.

I.D. 781-1000

ANALYTICAL RESULTS

BECHTEL CIVIL & MINERALS, INC.

Report Date: 11/11/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE)	
		D-70A (11/3/81)	D-70B (11/3/81)
pH (field)	Standard Units	6.85	6.80
Specific Conductance (field)	μ mhos/cm	640	540
Temperature (field)	$^{\circ}$ C	14.5	13
Total Organic Carbon	mg/l	24	33
Total Filterable Residue (180 $^{\circ}$ C)	mg/l	570	590
Chloride	mg/l	31	32
Total Iron	mg/l	120	260
Total Recoverable Oil and Grease	mg/l	73	31

COMMENTS: Refer to pages 1 through 4.

FOR RECRA RESEARCH, INC.

Or V. Finn

DATE

11/11/81

RECRA RESEARCH, INC.

I.D. #81-1000

ANALYTICAL RESULTS

BECHTEL CIVIL AND MINERALS, INC.

Report Date: 11/18/81
 Date Received: 11/13/81 - 11/17/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION			
		D-51	D-53	D-55	D-61
pH (field)	Standard Units	7.15	6.15	6.85	6.25
Conductance (25°C)	µmhos/cm	480	430	430	500
Chloride	mg/l	74	42	42	47
Fluoride	mg/l	0.50	0.36	0.54	0.30
Total Organic Carbon	mg/l	10	3.7	2.8	7.3
Total Cyanide	µg/l	<10	<10	<20	<20
Total Zinc	mg/l	0.226	0.212	0.161	0.266
Soluble Zinc	mg/l	0.054	0.189	0.198	0.118
Soluble Antimony	mg/l	<0.3	<0.3	<0.3	<0.3
Total Recoverable Oil and Grease	mg/l	<5	<5	<5	<5

COMMENTS: Samples were collected by Recra personnel on 11/13/81, 11/16/81, and 11/17/81. Analyses were performed according to U.S. Environmental Protection Agency methodologies.

FOR RECRA RESEARCH, INC.

DATE

R. V. Finn
 11/18/81



RECRA RESEARCH, INC.

I.D. #81-1051

ANALYTICAL RESULTS
BECHTEL CIVIL AND MINERALS, INC.

Report Date: 11/18/81
Date Received: 11/13/81 - 11/17/81

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION			
		D-64	D-66	D-69	D-70
pH (field)	Standard Units	6.75	7.30	6.40	6.15
Conductance (25°C)	umhos/cm	670	810	615	490
Chloride	mg/l	84	100	31	36
Fluoride	mg/l	0.33	0.36	0.39	0.26
Total Organic Carbon	mg/l	33	8	7.6	7.6
Total Cyanide	ug/l	<10	<10	<10	<20
Total Zinc	mg/l	0.083	0.235	1.4	3.4
Soluble Zinc	mg/l	0.099	0.125	0.443	0.533
Soluble Antimony	mg/l	<0.3	<0.3	<0.3	<0.3
Total Recoverable Oil and Grease	mg/l	<5	<5	<5	7

COMMENTS: Values reported as "less than" (<) indicate the working detection limit for the particular sample or parameter.

FOR RECRA RESEARCH, INC.

R. V. Finn

DATE

11/18/81



RECRA RESEARCH, INC.

I.D. #81-1051

RESEARCH
 CIVIL AND MINERALS
 BECHTEL CORPORATION
 10000 N. 10TH AVE.
 DENVER, CO 80231

RESULTS OF HYDROGEOLOGIC INVESTIGATION
OF
DANIELEWICZ ROUTE LANDFILLS

January 15, 1982

WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologists, and Environmental Scientists
201 Willowbrook Boulevard/P.O. Box 290
Wayne, New Jersey 07470

EXECUTIVE SUMMARY

Woodward-Clyde Consultants conducted a hydrogeologic investigation of the Norton/McGonigle Hilger Landfill complex which is located in close proximity to a segment of the proposed Danielewicz Route in Lockport, New York. Utilizing data previously collected by Bechtel, Woodward-Clyde Consultants reviewed the known hydrogeology of the area, conducted a terrain conductivity survey, and collected sample of groundwater from wells installed by Bechtel for analysis of parameters indicative of chemical groundwater pollution. These data were used to evaluate the effect that a proposed railroad cut in the vicinity of the landfills would have on groundwater.

The results of the analysis show that the proposed cut may affect groundwater in two zones. The upper zone is located in landfill materials in the Norton/McGonigle Hilger Landfills and the lower zone occurs in bedrock that will be excavated during construction of the cut. The results of the hydrogeologic analysis indicate that groundwater in the unconsolidated upper zone materials and in the landfill is separate from the groundwater that occurs in bedrock. Further, the probable flow directions of groundwater in the upper zone is northward toward Mill Street. Flow in the bedrock is westward from the area underlying the Norton/McGonigle Hilger Landfill towards the area of the proposed cut.

The samples were analyzed for those heavy metals and volatile organic chemical that are on the U.S. EPA priority pollutant list. Groundwater quality as tested in samples collected from wells in the surficial landfill materials and in the bedrock show that it is unlikely that groundwater has been significantly contaminated by landfill operations. No detectable levels of volatile organic

chemicals were identified. Detectable levels of arsenic, barium, and zinc were identified in a few levels of low concentrations.

The construction of the railroad cut in the study area will locally affect groundwater flow. Some seepage of groundwater will enter the cut and flow in ditches toward nearby surface streams. The quality of the seepage is expected to be similar to the existing quality of groundwater. Based on the chemical analyses performed for this study, the seepage is projected not to adversely affect surface water quality.

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	-1-
1.1 Previous Investigations	-3-
2.0 FIELD INVESTIGATIONS	-5-
2.1 Conductivity Survey	-5-
2.2 Collection of Environmental Samples	-8-
3.0 RESULTS	-12-
3.1 Conductivity Survey	-12-
3.2 Groundwater Chemistry	-13-
4.0 CONCLUSIONS	-16-
4.1 Existing Conditions	-16-
4.2 Future Conditions	-18-
5.0 REFERENCE	-21-
APPENDIX A RESULTS OF WATER QUALITY ANALYSES	A-1

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1	
2 ANALYTICAL RESULTS OF METAL ANALYSIS FOR THOSE EXCEEDING DETECTABLE CONCENTRATION	-15-
<u>APPENDIX A</u>	
1 METALS ANALYSIS OF ELEVEN WATER SAMPLES	A-4
2 VOLATILE ORGANICS	A-5
3 SPIKED ANALYSIS OF VOLATILE ORGANICS	A-8
4 METALS ANALYSIS OF EPA TEST STANDARDS AND SPIKED SAMPLES	A-9

LIST OF FIGURES

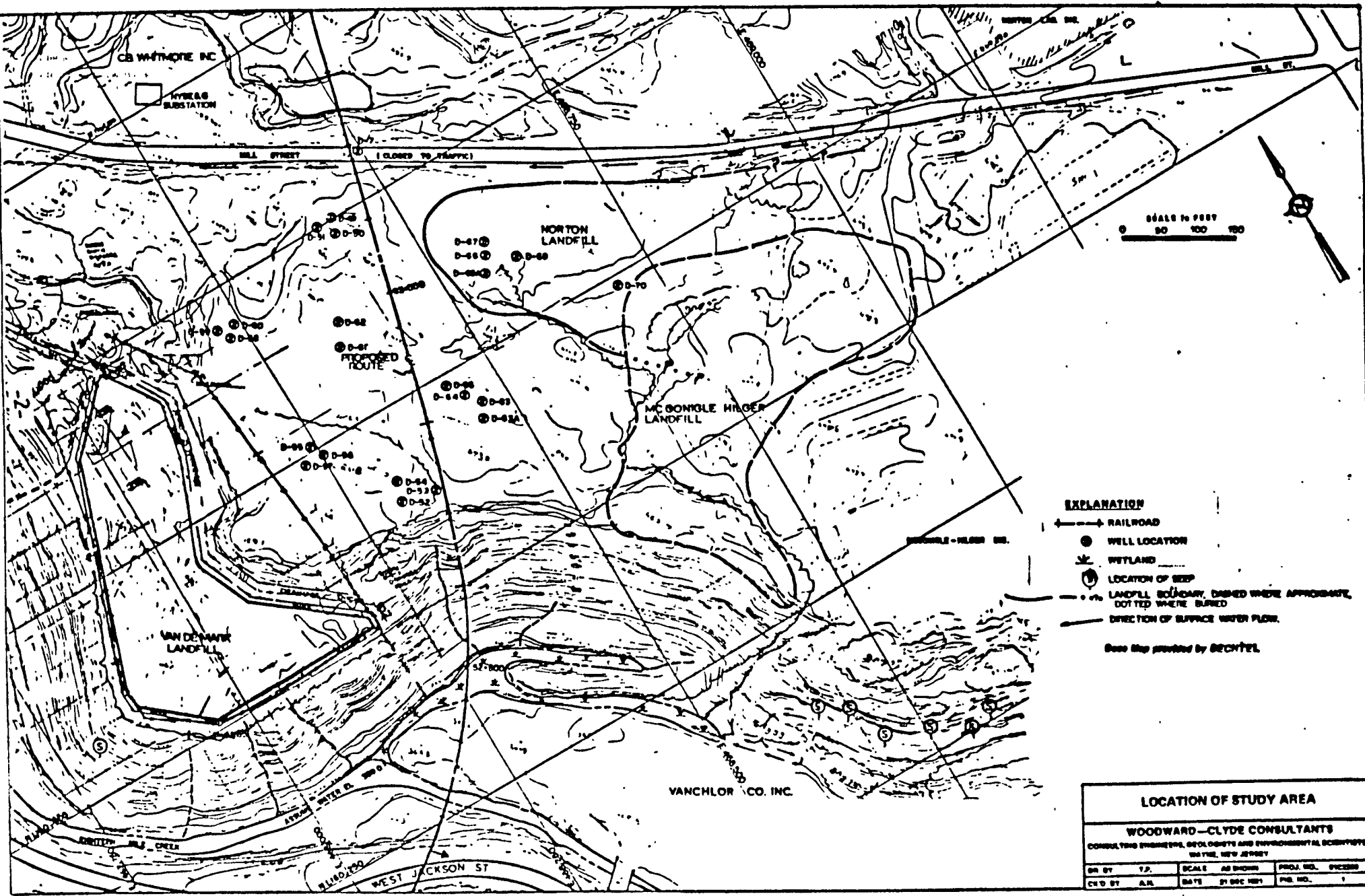
<u>Figure</u>	<u>Page</u>
1 LOCATION OF STUDY AREA	-2-
2 TERRAIN CONDUCTIVITY SURVEY LINES	-7-
3 CONDUCTIVITY CONTOURS 10 METER INTERCOIL SPACING	-9-
4 CONDUCTIVITY CONTOURS 20 METER INTERCOIL SPACING	-10-
5 WATER LEVEL CONTOURS GRIMSBY FORMATION	-17-
6 SCHEMATIC CROSS SECTION OF RAILROAD CUT IN STUDY AREA	-20-

1.0 INTRODUCTION

Woodward-Clyde Consultants (WCC) was retained by Somerset Railroad Corporation (SRC) to conduct a hydrogeologic investigation of the Norton/McGonigle Hilger Landfill complex which is located in close proximity to a segment of the proposed Danielewicz Route in Lockport, New York. The specific area investigated (herein called the Study Area) is the area north of Eighteen Mile Creek and south of Mill Street along the proposed center line route of the railroad (Figure 1). The eastern and western boundaries are marked by active and inactive landfills.

The purposes of the WCC investigation were to (1) evaluate whether the groundwater in the vicinity of the landfills showed indications of chemical pollutants; (2) estimate the probable flow direction of groundwater in the Study Area in the uppermost 40 feet; (3) estimate the probable effect that the railroad cut in the vicinity would have on the groundwater flow regime; and (4) evaluate whether seepage from the face of the cuts would contain contaminated water that could enter nearby surface water streams.

To accomplish these goals, WCC conducted a geophysical terrain conductivity survey of the area to identify groundwater contaminant plumes, if present, collected groundwater samples from wells installed previously by Bechtel Civil and Minerals, Inc. (Bechtel), and had them analyzed for parameters generally indicative of chemical groundwater pollution. These data then were interpreted with data provided by Bechtel to make preliminary conclusions concerning the groundwater hydrology of the Study Area.



EXPLANATION

- RAILROAD
- WELL LOCATION
- WETLAND
- LOCATION OF SEEP
- LANDFILL BOUNDARY, DASHED WHERE APPROXIMATE, DOTTED WHERE BURRED
- DIRECTION OF SURFACE WATER FLOW

Base Map provided by BECHTEL

LOCATION OF STUDY AREA					
WOODWARD-CLYDE CONSULTANTS					
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS					
BAYVIEW, NEW JERSEY					
DR. BY	T.P.	SCALE	AS SHOWN	PROJ. NO.	000000
CHK'D BY	A.M.	DATE	21 DEC 1971	FIG. NO.	1

1.1 Previous Investigations

Bechtel conducted a geologic and hydrogeological investigation of the area in October and November of 1981. The investigation included the installation of 22 groundwater wells completed in four geologic horizons. Based on the information provided by these wells and from outcrops present in the area, Bechtel completed an hydrogeologic analysis of the area (Bechtel 1981). These data were used by WCC as the basis for the hydrogeologic analysis and for the groundwater and chemical investigations presented herein.

The Study Area comprises an upland area that is about 120 feet above the elevation of Eighteen Mile Creek. Bedrock in this area consists of nearly horizontal Paleozoic Age sedimentary strata that are covered by a variable thickness of unconsolidated glacial deposits, soils, and, in places, with debris dumped by man. The strata underlying the study area consist of, from oldest to youngest, the Ordovician Age Queenston Formation and the Silurian Age Whirlpool, Power Glen, and Grimsby Formations. Based on the data collected from wells installed within the Study Area, the strata dip at an angle less than one degree in a southerly direction.

The oldest and lowermost Formation in the Study Area is the Queenston Formation. About 44 feet of the Queenston Formation were penetrated during the drilling program. This section of the Queenston Formation consists of red-brown shale with interbeds of greenish-gray shale and siltstone. The top of the Queenston Formation is about 400 feet MSL in the Study Area. The Queenston Formation is overlain by about 11 feet of gray to white sandstone, containing thin bands of gray shale, identified as Whirlpool Formation. The Whirlpool Formation is overlain by greenish-gray shale and siltstone that contains beds of limestone, dolomite, and calcareous sandstone, that was identified as the Power Glen Formation. The thickness of the Power Glen Formation, based on core hole data, ranges from about 19 to 29 feet. The top of the Power Glen Formation occurs at an elevation of about 434 to 438 feet MSL in the area of the centerline of the proposed railroad cut.

The uppermost Formation in the Study Area is the Grimsby Formation. In the Study Area the Grimsby Formation consists of about 30 feet of white to pale green fine grained sandstone and reddish-brown sandstone with interbedded siltstones and shales. The Grimsby Formation is exposed at the surface of the Study Area about 100 feet west of Well D-50, at the high wall of the VanDeMark Landfill, and in several small exposures between Well D-68 and Well D-63.

Joints are the major structural feature of the strata in the area. Three sets of nearly vertical joints which strike 20 to 30 degrees, 60 to 70 degrees, and 90 to 120 degrees were identified. In addition to these vertical joints, horizontal joints parallel to the bedding of the strata also are present. Based on bore hole data, jointing tends to be more prevalent near the bases of the Formations encountered than in their upper parts. The Grimsby Formation, the uppermost Formation exposed in the Study Area, has joint openings which have been measured up to 2 inches. Joint openings in the lower Formations were measured to be 0.1 inches or less.

To estimate the piezometric head for each of the Formations, Bechtel installed wells at the base of the Grimsby, Power Glen, and Whirlpool Formations. Water levels measured during November 1981 indicate that the piezometric head was higher in the Grimsby Formation than in the Power Glen and Whirlpool Formations. Measurements of water levels in wells that were completed at the base of the Grimsby Formation ranged from about 440 feet MSL in the eastern part of the site to about 430 feet MSL in the western part of the site (near the eastern edge of the VanDeMark Landfill). Water levels in wells completed at the base of the Power Glen Formation were about 20 feet lower than that in the overlying Grimsby Formation wells. These data indicate that the vertical flow of water was slow, that vertical joints are closed or not common in the upper part of the Power Glen Formation, and that the flow of water at the base of the Grimsby Formation is horizontal in a downgradient, westward direction. Finally, the existing information collected by Bechtel indicates that the flow of

water in the uppermost consolidated strata (Zone 2 of Bechtel 1981) is westward from the area of the Norton or McGonigle Hilger Landfills towards the VanDeMark Landfill.

Two shallow wells (D-69 and D-70) were completed in the unconsolidated material of the Norton Landfill (Figure 1). The water level in these wells in November 1981 was about 20 feet higher than in the nearby wells that were completed at the base of the Grimsby Formation. These few data indicate that groundwater in the unconsolidated material of the Norton Landfill was perched above the water in the lower part of the Grimsby Formation, and the vertical flow of water was impeded by low vertical permeability of the upper part of the Grimsby Formation.

In summary, the information previously obtained by Bechtel (1981) confirms the known stratigraphy of the general area. Hydrogeologic data suggests that water in the site area flows normally in a westerly direction and that water in the Norton Landfill materials is isolated from water present in the bedrock below the Norton Landfill.

2.0 FIELD INVESTIGATIONS

2.1 Conductivity Survey

On November 14 and 15, 1981 a subsurface geophysical survey was undertaken at the site. Of the various geophysical techniques which may be applicable to hydrogeologic analysis, electromagnetic terrain conductivity was selected. Terrain conductivity was chosen for the following reasons: (1) large areas can be surveyed within a relatively short period of time; (2) the apparatus itself is fairly portable and requires only two individuals to operate; and (3) WCC has extensive experience in utilization of the terrain conductivity meter for hydrogeologic interpretation.

A brief review of the principles of operation and instrumentation of terrain conductivity follows because the technique is, as yet, relatively new and represents

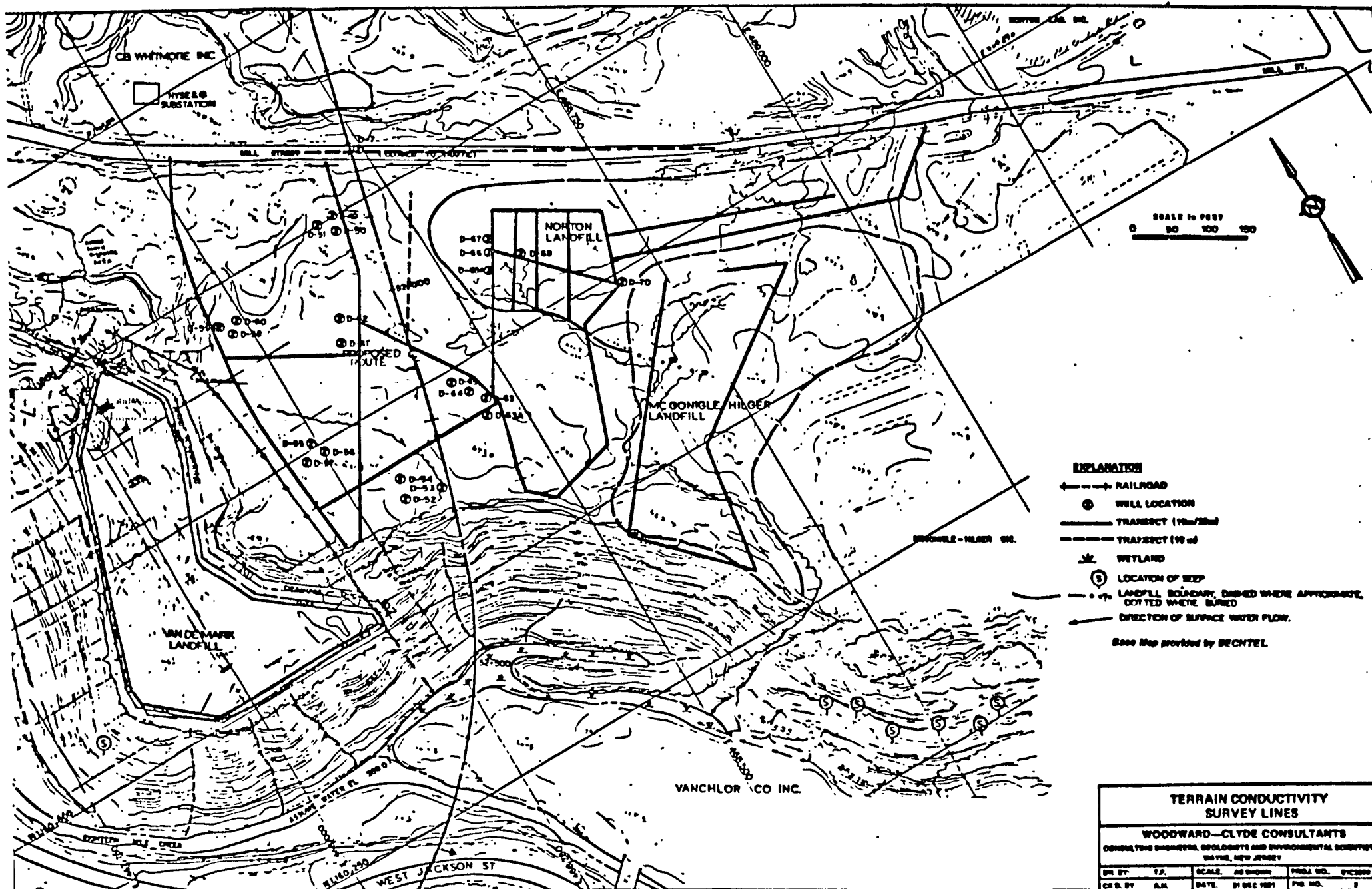
12/33

state-of-the-art technology. In use, the terrain conductivity transmitter induces current loops into subsurface materials, the magnitude of which are directly proportional to the electrical conductivity of subsurface materials in the area of that current loop. The current loop, in turn, generates a magnetic field, which is proportional to the amount of current within that particular loop and which is sensed and measured by the terrain conductivity receiver. Readings at the receiver are read directly as conductivity in millimhos per meter.

Terrain conductivity is dependent on the amount of pore space within subsurface materials, the interconnection of these pores, and the number of free ions contained within the liquid part of the materials. For example, a saturated silty clay would generally yield a higher conductivity value than a saturated sand/gravel material. Because previous boring logs showed the subsurface to be fairly consistent throughout the survey area, the limiting factor for any significant changes in terrain conductivity would be changes in the liquid part of the subsurface materials, either by the presence or absence of water or the concentration of dissolved solids. It should be noted however, that disposed material objects located within the subsurface could affect terrain conductivity significantly in areas of metal burial.

The terrain conductivity meter utilized for this survey was the Geonics EM34-3. The EM34-3 is a two-man portable unit which has both the transmitter and receiver coils flexibly connected. Intercoil (transmitter and receiver) spacing was selected to be 10 and 20 meters for an effective exploration depth of 7.5 (25 feet) and 15 (50 feet) meters.

Figure 2 depicts the conductivity survey traverses that were made during the investigation. Intercoil spacing was 10 and 20 meters at a station spacing of 10 meters along a traverse line. All survey lines were started and terminated from known points (such as wells, roads, etc.) as shown on Figure 2, and orientated by use of a hand-held compass which was adjusted for magnetic declination.



15/153

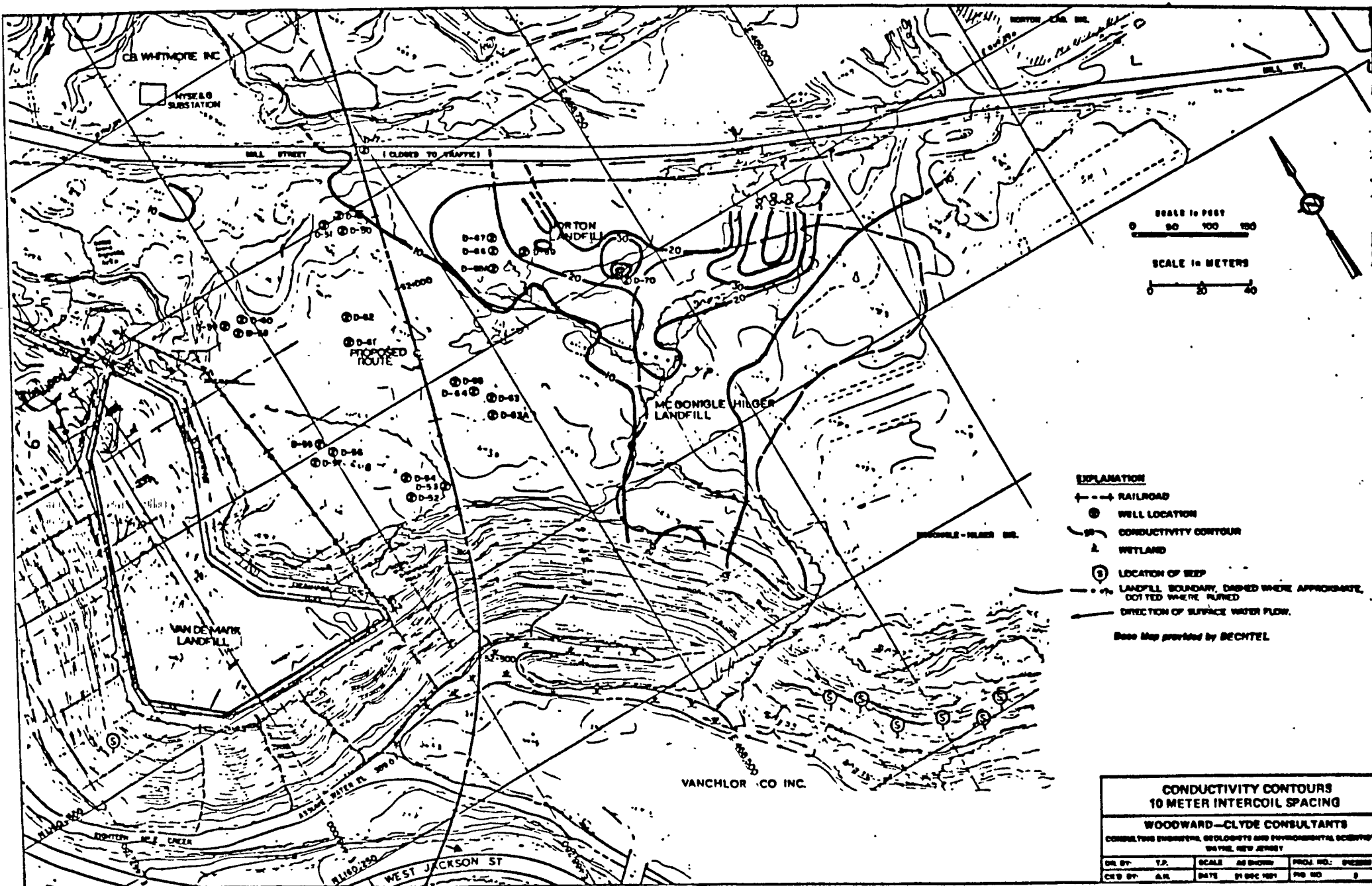
Prior to the start of the survey (both days) the meter was nulled (as per manufacturer's instruction) to assure consistency of all measurements. Battery power levels were checked throughout the survey to assure that readings were consistent. At each measurement station, coil alignment was carefully maintained, and field notes kept of any change in survey line orientation and the surrounding environment. Compass headings were maintained between each station to insure proper survey line locations.

Field measurements were transferred to large size maps provided by Bechtel. These data then were contoured (lines of equal conductivity) for both the 10 and 20 meter intercoil spacings. Figures 3 and 4 respectively show the interpreted contour lines from the survey. On both figures, only conductivity values 10 mmhos/meter or greater were contoured. Values less than 10 were considered to represent approximate "background readings".

2.2 Collection of Environmental Samples

Water samples were collected by WCC on 15 November 1981 from nine of the wells (Table I) installed by Bechtel and a stream sample from Eighteen Mile Creek collected at the approximate location of the proposed railroad center line south of the area examined. Before collection of well samples, each of the wells selected for sampling was purged of water present in the well. Either utilizing an air drive pump or a bailer for those wells in which the pump could not fit, the amount of water excavated was about 10 gallons except for those wells which were pumped or bailed dry.

Sample containers for metal analyses and for volatile organic analyses were delivered (in locked ice chests which contained sufficient blue ice to maintain 4°C for a period of 24 hours) on the evening of November 14, 1981 by Advanced Environmental Systems, Inc. (AES). Chain-of-custody commenced upon delivery of sample containers. At the site, the ice chests were opened by WCC's Dr. Hirsch.



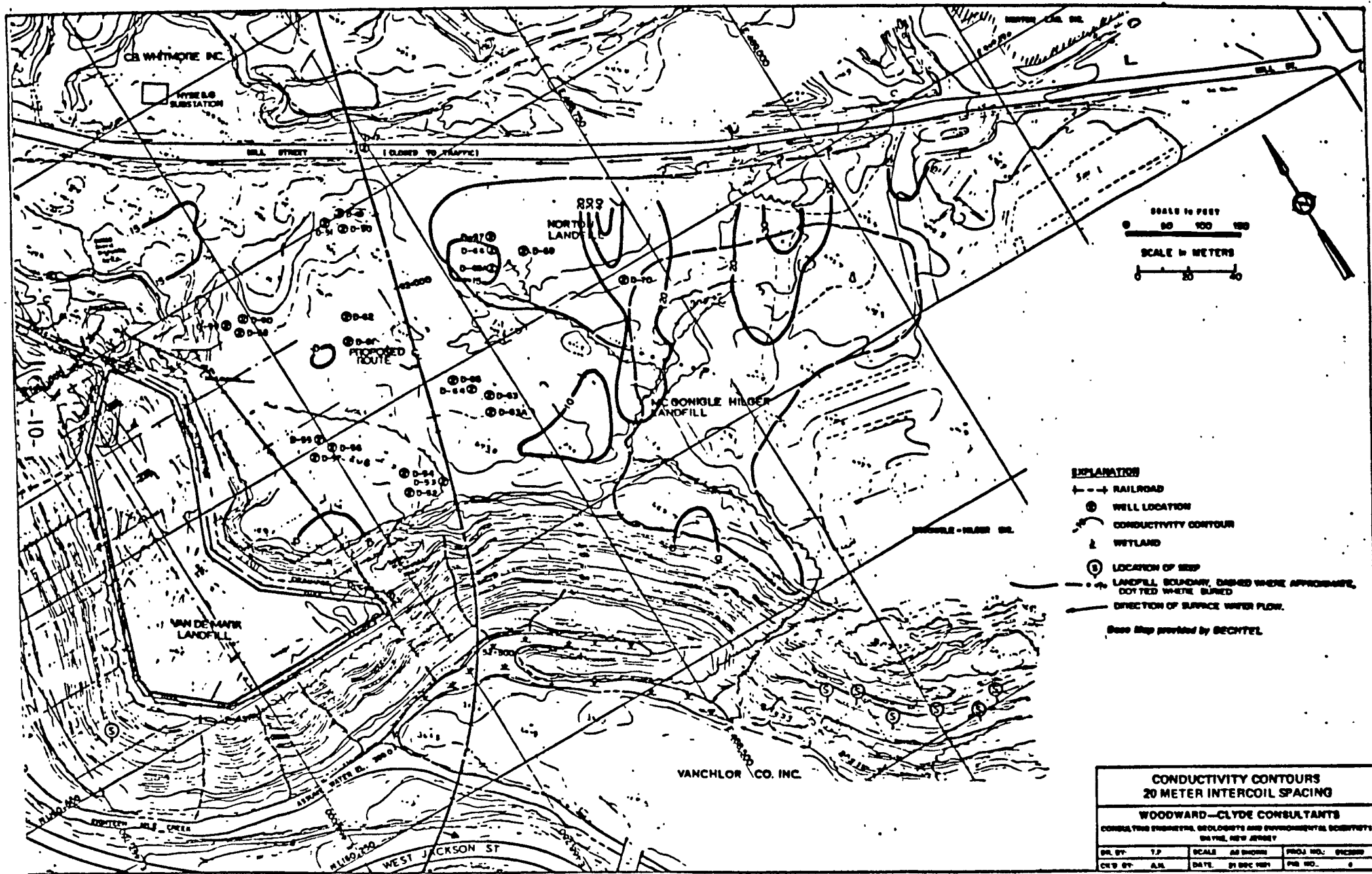


Table 1. GROUNDWATER SAMPLING WELLS, NOVEMBER 15, 1981.

<u>Well</u>	<u>Screen Depth (ft)¹</u>	<u>Formation Screened¹</u>	<u>Bechtel Zone¹</u>
51	22-40	Grimsby-Power Glen	2
53	30-45	Grimsby-Power Glen	2
55	28-44	Grimsby-Power Glen	2
61	35-45	Grimsby-Power Glen	2
64	37-47	Grimsby-Power Glen	2
66	27-37	Grimsby-Power Glen	2
68	48-57	Power Glen-Whirlpool	3
69	8-17	Soil, Landfill	1
70	10-19	Soil, Landfill	1

¹Data from Bechtel 1981.

Water samples for heavy metals analyses were collected by a PVC bailer that was rinsed prior to collection with distilled water provided by AES. At least one full bailer of well water was discarded before a sample of water was collected. Approximately 1 liter of unfiltered groundwater was collected and it was immediately placed in the ice chest. The time of collection was noted and the sample was appropriately labeled. The sample identifier was the number of the Bechtel well.

Samples for the volatile organic analyses were collected with a Teflon bailer. Prior to collection the Teflon bailer was rinsed with laboratory grade methanol and then with the distilled water provided by AES. At least one volume of water collected by the Teflon bailer was discarded prior to filling the septum vials provided by AES.

The sample vials were returned to the ice chest immediately. After five wells were sampled, a field blank was collected. Distilled water utilized for rinsing purposes was poured directly from the supply container into the appropriate sample containers and labeled. The sample vials were returned to the ice chest immediately.

The ice chests were locked and delivered directly to AES's laboratory at Niagara Falls, New York. A chain-of-custody record is available at AES of the sample transfer that occurred. A report of the water quality analyses of these samples is provided in Appendix A.

3.0 RESULTS

3.1 Conductivity Survey

After plotting and contouring the terrain conductivity data two significant areas were delineated (Figure 3). These areas are located near Well D-69 and 175 feet east of Well D-70. It should be noted that contour lines in these areas have been left open since the ability to collect data on Mill Road and north of

Mill Road was severely hampered due to interference of overhead power lines and the logistics of the surface water body located on the north side of Mill Road.

On the basis of the 10 meter and 20 meter contour maps the following preliminary findings are made. At the area indicated as approximately 175 feet east of Well D-70, the conductivity values with an intercoil spacing of 10 meters are high (+100 mmhos/meter) (Figure 3). These values are significantly less in the same area for 20 meter intercoil spacing. This is interpreted that materials causing these elevated values (at 10 meters) are confined within the upper 7.5 meters of the subsurface. This anomaly is interpreted as representing an area of the North Landfill in which man-made metal objects have been disposed. It is highly unlikely that this anomaly is caused by natural subsurface materials or changes in the groundwater quality.

In the area defined as 100 feet east of Well D-69, the conductivity values measured were greater than 50 millimhos per meter at the 10 meter coil spacing and 40 millimhos per meter values at the 20 meter coil spacing (Figures 3 and 4). Elevated conductivity values near Well D-69 for the 10 meter spacing are not indicated for the 20 meter spacing of the same area. Interpretation of this area (Well D-69 and at 100 feet east of Well D-69) suggests a change in groundwater quality and a groundwater flow northwest and north toward the surface water body north of Mill Road.

3.2 Groundwater Chemistry

The ten water samples collected by WCC on November 15, 1981 were analyzed for arsenic, barium, cadmium, total chrome, lead, nickel, zinc, copper, mercury, beryllium, and the volatile organics (GC/MS scan) that are on the priority pollutant list. Analytical methodology and quality assurance are described in Appendix A. These parameters were selected as being the most likely indications of chemical pollution of groundwater.

The results of the chemical analysis indicated that all of the measured compounds were below detectable limits except arsenic, barium, zinc, and methylene chloride. Metals exceeding detection limits are listed in Table 2. The only volatile organic chemicals identified in any of the samples was methylene chloride. The presence of methylene chloride, however, was due to an error of AES. They inadvertently supplied WCC with distilled water that normally is used to rinse samplers when conducting analyses for the extractable organic pollutants. As per EPA requirements, glass jars used to store distilled water for such purposes are rinsed with methylene chloride prior to filling with distilled water. The extremely high concentrations in the field blank and the absence of other volatile organics in the blanks and any of the samples led to the detection of this error. A discussion of the presence of methylene chloride is supplied with the water quality analyses in Appendix A.

Arsenic exceeded detection limits only in Well D-68. The concentration of arsenic in Well D-68 of 0.068 mg/l exceeded the primary drinking water standard for arsenic of 0.050 mg/l (Federal Register August 27, 1980), by 0.018 mg/l. Well D-68 is screened from 47.7 feet to 57 feet below ground surface (lower Power Glen Formation), approximately 200 feet northwest of the McGonigle Hilger Landfill in the Norton Landfill. Well D-66, located approximately 20 feet northeast of Well D-68, screened from 27.4 feet to 37.0 feet below ground surface (Grimsby Formation) was sampled and contained no detectable arsenic.

Barium exceeded detection limits only in Wells D-64 and D-66. The concentration of barium of 0.65 mg/l in Well D-64 was below the primary drinking water standard (Federal Register August 27, 1980) of 1.0 mg/l. Well D-64 is located approximately 230 feet west of the McGonigle Hilger Landfill, screened from 36.9 feet to 46.7 feet below ground surface in the Grimsby Formation in an area identified as a groundwater high (Figure 5).

21/38

Table 2. ANALYTICAL RESULTS OF METAL ANALYSIS FOR THOSE EXCEEDING DETECTABLE CONCENTRATION (Expressed in mg/l or ppm).

<u>Well Number</u>	<u>Arsenic¹</u>	<u>Metal Barium²</u>	<u>Zinc³</u>
D-51	< 0.010 ⁴	< 0.200	< 0.020
D-53	< 0.010	< 0.200	0.165
D-55	< 0.010	< 0.200	< 0.020
D-61	< 0.010	< 0.200	0.038
D-64	< 0.010	0.650	0.035
D-66	< 0.010	1.800	< 0.020
D-68	0.068	0.200	0.023
D-69	< 0.010	0.200	0.375
D-70	< 0.010	0.200	0.400
Str-1	< 0.010	0.200	0.035

¹Primary drinking water standard 0.05 mg/l. Federal Register Aug. 27, 1980.

²Primary drinking water standard 1.0 mg/l. Federal Register Aug. 27, 1980.

³Organoleptic ambient water criteria 5.0 mg/l. Federal Register Nov. 29, 1980.

⁴Less than equals the detection limit.

The concentration of barium of 1.8 mg/l in Well D-66 exceeds the primary drinking water standard by 0.8 mg/l. Well D-66 is 20 feet northeast of Well D-68 which had no detectable concentration of barium.

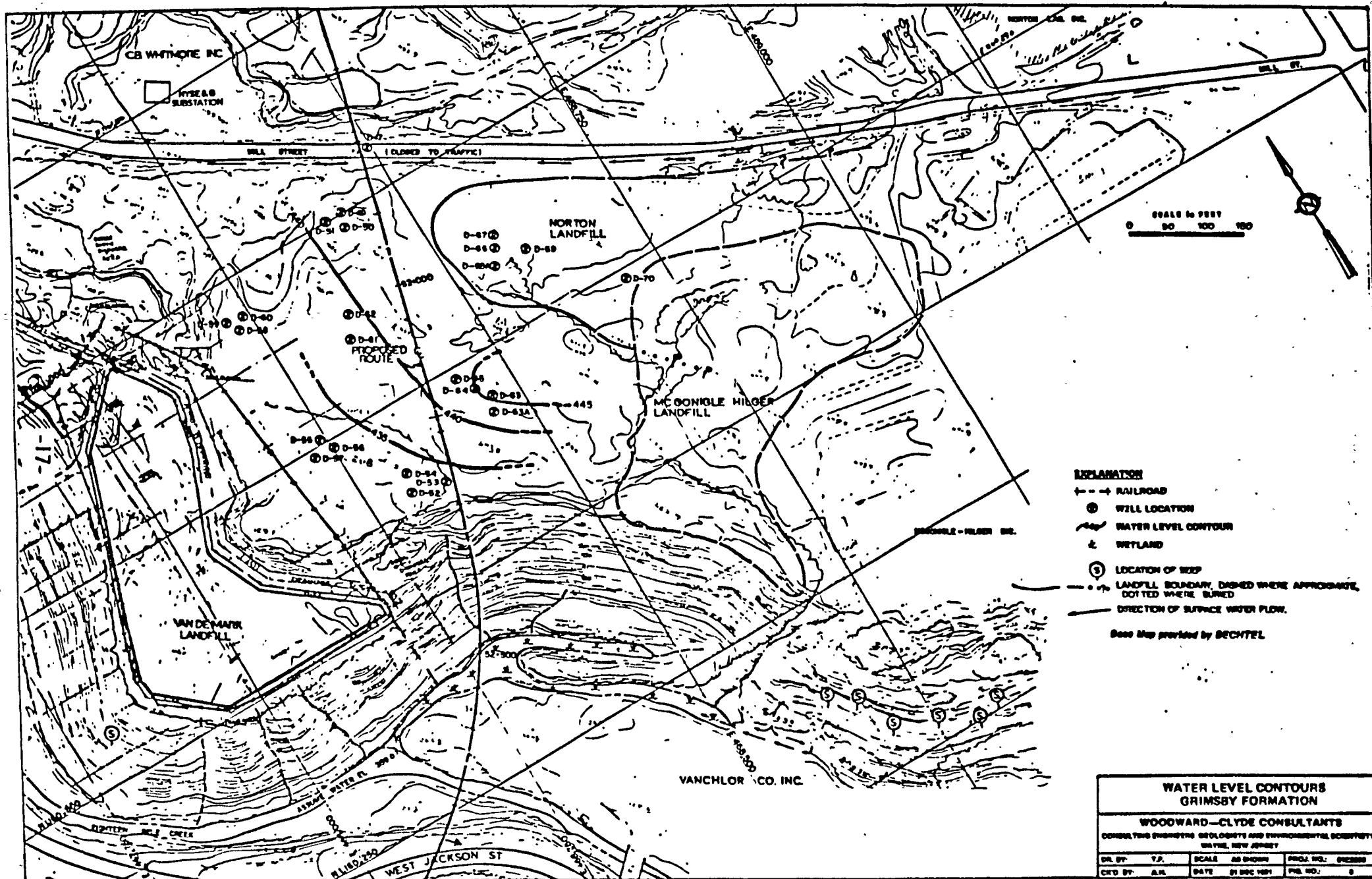
Detectable concentrations of zinc were found in seven of the water samples (Table I). Zinc concentrations ranged from 0.023 mg/l to 0.4 mg/l. All measured concentrations of zinc in the water samples was less than the organoleptic (taste and odor) ambient water criteria (Federal Register November 28, 1980) of 5 mg/l. There is no primary drinking water standard for zinc.

The greater zinc concentrations were found in Wells D-69 and D-70, located in the Norton Landfill, screened in the unconsolidated fill material. The zinc concentration found in Wells D-66 and D-68 were non-detectable and 0.023 mg/l, respectively. These two wells are located in the Norton Landfill, northwest of Wells D-69 and D-70, and are screened in the Grimsby and Power Glen Formations.

4.0 CONCLUSIONS

4.1 Existing Conditions

Groundwater occurs in the unconsolidated fill materials of the Norton and McGonigle Hilger Landfills and in bedrock below the landfills. Based on data of the conductivity survey, and the water levels in the landfill materials, groundwater within the Norton Landfill appears to be flowing northward toward Mill Street. Vertical percolation of groundwater from the landfill materials, in which the piezometric head is 20 feet greater than that of the underlying bedrock, is evidently slow. Preliminary data provided by the conductivity survey and water levels measured in wells, to date, indicate that the water in the landfill materials currently is effectively isolated from the groundwater within the bedrock.



23/158

The water table in the bedrock occurs near the base of the Grimsby Formation. Water level data collected by Bechtel on November 9, 1981, show the gradient to be in a generally westerly direction in the central part of the Study Area. Groundwater in the Grimsby Formation flows generally from the eastern part of the Study Area (location of the Norton and McGonigle Hilger Landfills) toward the VanDeMark Landfill. Bechtel (1981) reported a similar direction of flow for groundwater that occurs at greater depths in the formations underlying the Grimsby Formation.

Groundwater samples were collected from wells completed in the landfill materials, in the Grimsby Formation, and from two wells at greater depths. The samples were analyzed for parameters that generally are indicative of chemical pollution. Specifically, the chemical parameters for which groundwater samples were tested were the heavy metals and volatile organics that are on the U.S. Environmental Protection Agency priority pollutant list. Except for arsenic, barium, and zinc, which occurred in relatively low concentrations in a few of the groundwater samples, concentrations of the parameters measured were lower than the detectable limits. These data suggest that the groundwater within the landfill materials and in bedrock below the landfill has not been significantly contaminated by fill materials in the Norton and McGonigle Hilger Landfills. No samples that are representative of water down gradient from the VanDeMark landfill were collected.

4.2 Future Conditions

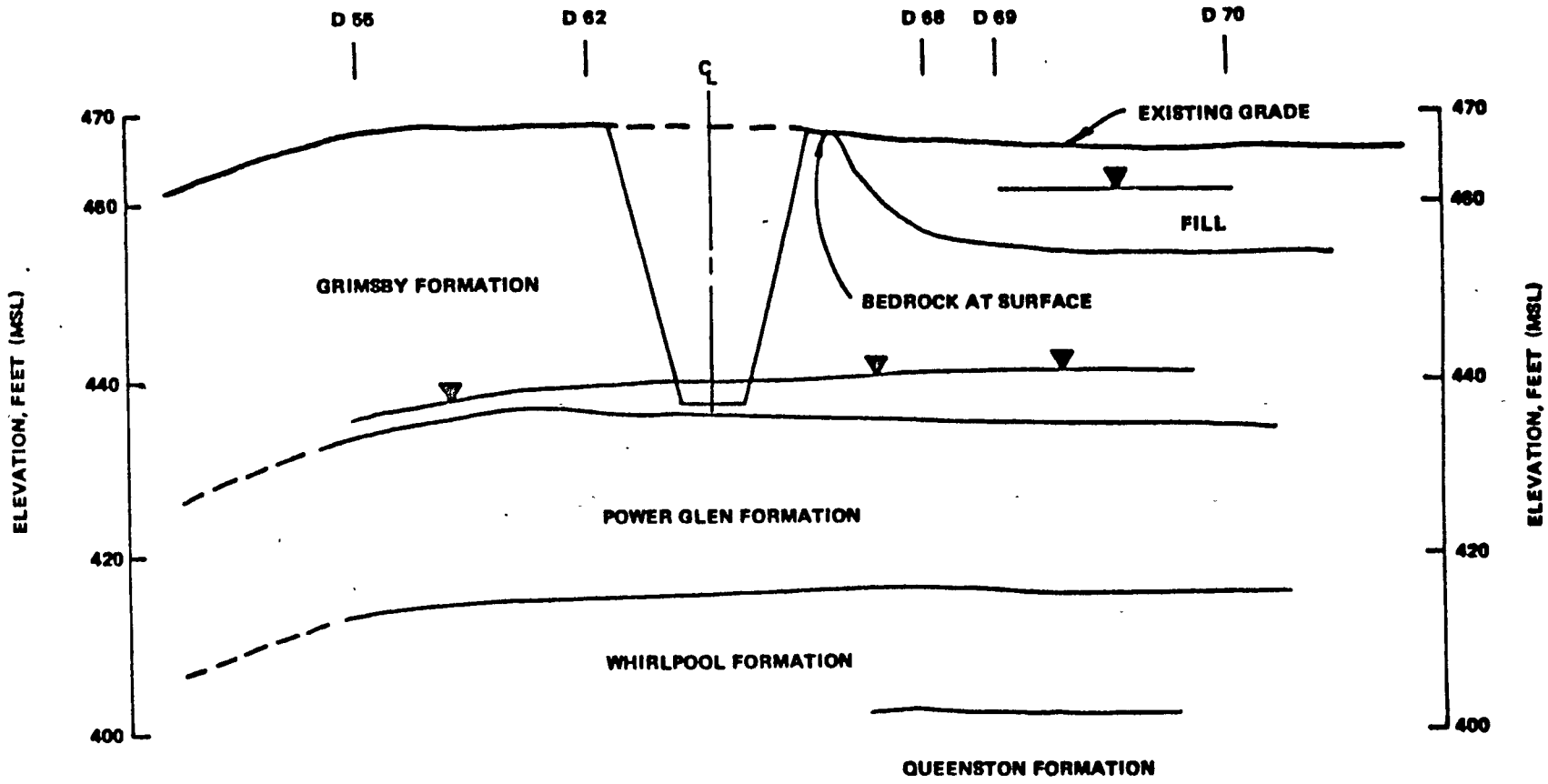
Somerset Railroad Corporation proposes to construct a railroad cut approximately along the center line shown in Figure 1. The center line elevation of the bottom of the cut will range from about 446 feet MSL at the southern end of the bluff near Jackson Street and grade downward at about a 1.6 percent slope northward to about 437 feet MSL at the intersection of Mill Street (Bechtel

Drawing SK-C-085, Rev. C, 12/11/81). Based on existing information, the cut will be constructed through the Grimsby Formation and the base of the cut will be approximately at the base of the Grimsby Formation in this area (Figure 6). Landfill materials apparently will not be disturbed during the construction of the cut.

Should the cut be constructed as currently described, groundwater flow will be affected locally. Some groundwater in the vicinity of the cut, which will act as a linear drain in the area, will flow toward the cut and seep into it. The existing information on groundwater elevations in the Study Area suggests that the groundwater table in the Grimsby Formation will be intercepted. Thus, groundwater at the base of the Grimsby Formation (bedrock equivalent to zone 2 groundwater of Bechtel 1981) will flow westward from the area of the Norton and McGonigle Hilger Landfills toward the cut. Bechtel (1981) estimates that the total flow into the cut will be low.

Groundwater in the Norton Landfill materials (equivalent to zone 1 groundwater of Bechtel 1981) is expected to continue to flow northward toward Mill Street. The rate of vertical percolation from the landfill materials to groundwater in the Grimsby Formation is not expected to increase unless construction activities actually induces fractures in the Grimsby Formation to increase vertical percolation rates or the bedrock that will divide the cut from the landfill is breached.

Groundwater flow from the VanDeMark Landfill toward the proposed cut is improbable unless average existing conditions are substantially different from the data collected by Bechtel during 1981. Groundwater elevations measured in the Grimsby Formation west of the center line of the railroad cut were equal or lower than the elevation of the center line of the cut. Because the cut will intercept groundwater flow in the Grimsby Formation, groundwater elevations are expected to decline west of the cut after construction.



LEGEND

- D 62 WELL LOCATION
- ▼ WATER TABLE, 9 NOVEMBER 1981
- C CENTERLINE OF CUT

0 100 FT
 VERTICAL EXAGGERATION = 5X

SCHEMATIC CROSS SECTION OF RAILROAD CUT IN STUDY AREA		
WOODWARD—CLYDE CONSULTANTS		
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS WAYNE, NEW JERSEY		
DR. BY:	BTD	SCALE: AS SHOWN
CK'D. BY:	WMC	DATE: 4 JAN 1982
PROJ. NO.: 81C2209		FIG. NO.: 6

26/38

Some seepage of groundwater will enter the cut and flow along a perimeter ditch northward toward Mill Street and then into the existing stream. The chemical quality of the seepage is expected to be similar to the existing groundwater quality. Based on the chemical analyses performed to date, the seepage is projected not to adversely affect surface water quality.

5.0 REFERENCE

Bechtel Civil and Minerals, Inc. 1981. Somerset Railroad Corporation Hydrogeologic Study Danielewicz Route: Station 51+810 to 52+330. December 1981.

APPENDIX A
RESULTS OF WATER QUALITY ANALYSES

30/30

EMERGENCY RESPONSE ANALYSIS
FOR METALS AND VOLATILE ORGANICS
ON ELEVEN WATER SAMPLES

Report Prepared For
WOODWARD-CLYDE CONSULTANTS
by
ADVANCED ENVIRONMENTAL SYSTEMS, INC.

Prepared by:

November 16, 1981

AES - Report RG


David Szczesny
Laboratory Director

SCOPE OF WORK

As requested by Dr. Alfred Hirsch of Woodward-Clyde Consultants, Advanced Environmental Systems (AES) has completed Emergency Response analysis of eleven (11) groundwater samples. The samples were analyzed for arsenic, barium, cadmium, total chrome, lead, nickel, zinc, copper, mercury, beryllium, and volatile organics by GC/MS.

SAMPLE COLLECTION AND CHAIN OF CUSTODY

The samples were collected by Woodward-Clyde personnel and delivered to the AES laboratories at 2:30 p.m. on November 15, 1981 by Dr. Hirsch. Chain of custody was immediately transferred to Mrs. Judy McDougall, Document Control Officer of AES.

METHODOLOGY

Analysis for volatile organics was performed in strict accordance with the "Federal Register", Vol. 44, No. 233, December 3, 1979. Analysis was performed on a Finnigan OWA-30, Gas Chromatograph/Mass Spectrometer.

Metals analysis was performed in accordance with methods outlined in "Methods for the Chemical Analysis of Water and Wastes", U.S. EPA 600/4-79-020, March 1979. Analysis was performed on a Jarrell-Ash Model 810 Atomic Absorption Spectrophotometer.

RESULTSTable 1. Metals Analysis of Eleven Water Samples
(Expressed as micrograms per liter, or ppb)

Metal	Well D-51	Well D-53	Well D-55	Well D-61	Well D-64	Well D-66	Well D-68	Well D-69	Well D-70	STR-1	Trip Blank	Field Blank
Arsenic	<10.	<10.	<10.	<10.	<10.	<10.	68.	<10.	<10.	<10.	<10.	<10.
Barium	<200.	<200.	<200.	<200.	650.	1800.	<200.	<200.	<200.	<200.	<200.	<200.
Cadmium	<25.	<25.	<25.	<25.	<25.	<25.	<25.	<25.	<25.	<25.	<25.	<25.
Chromium	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.
Lead	<250.	<250.	<250.	<250.	<250.	<250.	<250.	<250.	<250.	<250.	<250.	<250.
Nickel	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.	<100.
Zinc	<20.	165.	<20.	38.	35.	<20.	23.	375.	400.	35.	<20.	<20.
Copper	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.
Mercury	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Beryllium	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.	<50.

¹ (<) Less than equals the limits of detection.

32/34

Table 2.

VOLATILE ORGANICS

(EXPRESSED AS MICROGRAMS PER LITER, OR ppb)

Parameter	Well D-51	Well D-53	Well D-55	Well D-61	Well D-64	Well D-66	Detection Limit
ACROLEIN	BDL ¹	BDL	BDL	BDL	BDL	BDL	100
ACRYLONITRILE	BDL	BDL	BDL	BDL	BDL	BDL	100
BENZENE	BDL	BDL	BDL	BDL	BDL	BDL	10
BIS (CHLOROMETHYL) ETHER	BDL	BDL	BDL	BDL	BDL	BDL	10
BROMOFORM	BDL	BDL	BDL	BDL	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	BDL	BDL	BDL	BDL	10
CHLOROBENZENE	BDL	BDL	BDL	BDL	BDL	BDL	10
CHLORODIBROMOMETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
CHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1-CHLOROETHYL VINYL ETHER	BDL	BDL	BDL	BDL	BDL	BDL	10
CHLOROFORM	BDL	BDL	BDL	BDL	BDL	BDL	10
DICHLOROBROMOMETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
DICHLORODIFLUOROMETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,1-DICHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,2-DICHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,1-DICHLOROETHYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,2-DICHLOROPROPANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,3-DICHLOROPROPYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
ETHYLBENZENE	BDL	BDL	BDL	BDL	BDL	BDL	10
ETHYL BROMIDE	BDL	BDL	BDL	BDL	BDL	BDL	10
ETHYL CHLORIDE	BDL	BDL	BDL	BDL	BDL	BDL	10
ETHYLENE CHLORIDE ²	119.0	880.0	93.0	16.0	120.0	99.0	10
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
TETRACHLOROETHYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
TOLUENE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,1,1-TRICHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,1,2-TRICHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
TRICHLOROETHYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
TRICHLOROFLUOROMETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	BDL	BDL	BDL	BDL	10

¹ (BDL) Below Detection Limits² See DISCUSSION

Table 2. (Cont'd)

VOLATILE ORGANICS

(EXPRESSED AS MICROGRAMS PER LITER, OR ppb)

Parameter	Well D-68	Well D-69	Well D-70	STR-1	Trip Blank	Field Blank	Detection Limit
ACROLEIN	BDL	BDL	BDL	BDL	BDL	BDL	100
ACRYLONITRILE	BDL	BDL	BDL	BDL	BDL	BDL	100
BENZENE	BDL	BDL	BDL	BDL	BDL	BDL	10
BIS (CHLOROMETHYL) ETHER	BDL	BDL	BDL	BDL	BDL	BDL	10
BROMOFORM	BDL	BDL	BDL	BDL	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	BDL	BDL	BDL	BDL	10
CHLOROBENZENE	BDL	BDL	BDL	BDL	BDL	BDL	10
CHLORODIBROMOMETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
CHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
2-CHLOROETHYL VINYL ETHER	BDL	BDL	BDL	BDL	BDL	BDL	10
CHLOROFORM	BDL	BDL	BDL	BDL	BDL	BDL	10
DICHLOROBROMOMETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
DICHLORODIFLUOROMETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,1-DICHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,2-DICHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,1-DICHLOROETHYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,2-DICHLOROPROPANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,3-DICHLOROPROPYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
ETHYLBENZENE	BDL	BDL	BDL	BDL	BDL	BDL	10
METHYL BROMIDE	BDL	BDL	BDL	BDL	BDL	BDL	10
METHYL CHLORIDE	BDL	BDL	BDL	BDL	BDL	BDL	10
METHYLENE CHLORIDE ¹	210.0	270.0	BDL	BDL	22,000.0	27.0	10
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
TETRACHLOROETHYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
TOLUENE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,1,1-TRICHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
1,1,2-TRICHLOROETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
TRICHLOROETHYLENE	BDL	BDL	BDL	BDL	BDL	BDL	10
TRICHLOROFLUOROMETHANE	BDL	BDL	BDL	BDL	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	BDL	BDL	BDL	BDL	10

¹ See DISCUSSION

Table 2. (Cont'd)

VOLATILE ORGANICS(EXPRESSED AS MICROGRAMS PER LITER, OR ppb)

Parameter	Well D-51 Duplicate						Detection Limit
CROLEIN	BDL						100
CRYLONITRILE	BDL						100
ENZENE	BDL						10
IS (CHLOROMETHYL) ETHER	BDL						10
KOMOFORM	BDL						10
KARBON TETRACHLORIDE	BDL						10
HLOROBENZENE	BDL						10
HLORODIBROMOMETHANE	BDL						10
HLOROETHANE	BDL						10
-CHLOROETHYL VINYL ETHER	BDL						10
HLOROFORM	BDL						10
ICHLOROBROMOMETHANE	BDL						10
HLORODIFLUOROMETHANE	BDL						10
-DICHLOROETHANE	BDL						10
-DICHLOROETHANE	BDL						10
,1-DICHLOROETHYLENE	BDL						10
,2-DICHLOROPROPANE	BDL						10
,3-DICHLOROPROPYLENE	BDL						10
THYLBENZENE	BDL						10
ETHYL BROMIDE	BDL						10
ETHYL CHLORIDE	BDL						10
ETHYLENE CHLORIDE ¹	113.0						10
,1,2,2-TETRACHLOROETHANE	BDL						10
ETRACHLOROETHYLENE	BDL						10
OLUENE	BDL						10
,2-TRANS-DICHLOROETHYLENE	BDL						10
,1,1-TRICHLOROETHANE	BDL						10
,1,2-TRICHLOROETHANE	BDL						10
RICHLOROETHYLENE	BDL						10
RICHLOROFLUOROMETHANE	BDL						10
INYL CHLORIDE	BDL						10

¹ See DISCUSSION

35/38

36/33

QUALITY ASSURANCE

Table 3. Spiked Analysis of Volatile Organics
(Expressed as micrograms per liter, or ppb)

Analysis	Original Concen.	Added Concen.	Expected Concen.	Reported Concen.
Benzene	<10.0	109.0	109.-119.	116.0
Methylene Chloride	880.0	120.0	880.-1000.	1050.0
Tetrachloroethylene	<10.0	99.0	99.-109.	110.0
Toluene	<10.0	92.0	92.-102.	96.0
1,2-trans-Dichloroethylene	<10.0	130.0	130.-140.	160.0
Trichloroethylene	<10.0	91.0	91.-101.	110.0

QUALITY ASSURANCE

I. Accuracy

Table 4. Metals Analysis of EPA Test Standards and Spiked Samples
(Expressed as micrograms per liter, or ppb)

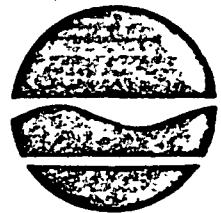
Analysis	Type	Original Concn.	Added Concn.	Expected Concn.	Reported Concn.	Acceptable 95% Confidence Limits
Arsenic	EPA	200.0	-	200.0	200.0	160.0 - 250.0
	Spike	<10.0	25.0	25.0-35.0	25.0	20.0 - 43.8
Barium	Spike	900.0	2000.0	2900.0	3150.0	2500. - 3400.
Cadmium	EPA	27.0	-	27.0	27.6	21.6 - 33.8
	<Spike	25.0	25.0	25.0-50.0	25.0	20.0 - 62.5
Chromium	EPA	150.0	-	150.0	145.0	120.0 - 187.5
	Spike	<100.0	100.0	100.0-200.0	200.0	80.0 - 250.0
Lead	EPA	250.0	-	250.0	230.0	200.0 - 312.5
	Spike	<250.0	250.0	250.0-500.0	230.0	200.0 - 625.0
Nickel	EPA	250.0	-	250.0	300.0	200.0 - 312.5
	Spike	<100.0	100.0	100.0-200.0	100.0	80.0 - 250.0
Zinc	EPA	200.0	-	200.0	195.0	160.0 - 250.0
	Spike	188.0	250.0	438.0	405.0	388.0 - 500.5
Copper	EPA	250.0	-	250.0	200.0	200.0 - 312.5
	Spike	<50.0	50.0	50.0-100.0	55.0	40.0 - 125.0
Mercury	EPA	2.4	-	2.4	2.0	1.92 - 3.0
Beryllium	EPA	750.0	-	750.0	785.0	600.0 - 937.5
	Spike	<50.0	50.0	50.0-100.0	50.0	40.0 - 125.0

DISCUSSION

Bottles for sample collection were prepared according to EPA protocol and delivered by AES. When preparing any bottle for collection of extractable organics, the final step requires a rinse using methylene chloride. It is apparent that the distilled-deionized water used to clean the bailing equipment was taken from the bottle for extractable organics labeled "blank". This would account for the detection of only methylene chloride in the volatile organic samples. All other volatile compounds analyzed were below the listed detection limits.

Quality assurance indicates that the values reported are within the 95% Confidence limits recommended by the U.S. EPA, Environmental Monitoring and Support Laboratory.

New York State Department of Environmental Conservation
Division of Regulatory Affairs-Region 9
600 Delaware Ave., Buffalo, NY 14202
716/847-4551



Robert F. Flacke
Commissioner

May 12, 1982

Mr. Peter G. Carney, Project Manager
Somerset Railroad Corporation
4500 Vestal Parkway East
Binghamton, New York 13902

Re: Somerset Railroad
Mill Street Cut
Water Quality Analysis

Dear Mr. Carney:

This is to confirm and summarize groundwater testing presently being conducted by Somerset Railroad Corporation at this Department's request. The wells referenced in Table 1 of Woodward-Clyde Consultants' January 15, 1982 "Results of Hydrogeologic Investigation of Danielewicz Route Landfills" shall be sampled and analyzed for the following parameters:

Arsenic	Methylene Chloride
Barium	Polychlorinated Biphenyls
Cadmium	Total Halogenated Organics (as Lindan)
Chromium	Oil and Grease
Lead	
Zinc	

Note that analyses shall be conducted at detection levels below quality standards set for groundwater.

Should you require any further clarifications, please contact me at the above number. Thank you.

Respectfully,

Paul D. Eismann
Alternate Permit Administrator

PDE:ib

cc: R. Manna
R. Mitrey
Attn: J. Tygert

Somerset Railroad Corporation

ATTACHMENT 7.3-5

1/12

Subsidiary of
New York State Electric & Gas Corporation
4500 Vestal Parkway East, Binghamton, New York 13902 (607) 729-2551

June 17, 1982
C.350.00
MRR710
SRCF-82- 34

Mr. Steven J. Doleski
Regional Permit Administrator
Office of Environmental Analysis
Region 9
NYS Department of Environmental
Conservation
600 Delaware Avenue
Buffalo, New York 14202

Subject: Somerset Railroad Corporation
Freshwater Wetlands Permit

Dear Mr. Doleski:

In accordance with the Special Conditions of the Freshwater Wetlands Permit and the schedule set forth in our letter of June 16, 1982, SRC submits the following documents:

- 1) June 15, 1982 Report on Groundwater Sampling Analysis prepared by Woodward-Clyde Consultants.
- 2) Executive Summary Reports of archaeological/cultural resource field study prepared by Cultural Heritage Research Services, Inc.

Should you have any questions or concerns, please contact Mr. Joseph Campisi of our staff.

Very truly yours,

Robert E. Lude
for

Peter G. Carney
Project Manager
Somerset Railroad Corporation

PGC/db

cc: JS Campisi w/attachment
P Eismann - NYDEC - Region 9
AE Kintigh w/o attachment
R Manna - NYDEC - Albany
MJ Ray w/o attachment
RE Rude w/o attachment
DCC

SOMERSET RAILROAD

JUN 16 1982

RECEIVED

June 15, 1982
60776A .01
File Log No. 150(a)

Mr. Peter Carney
New York State Electric & Gas Corporation
4500 Vestal Parkway East
Binghamton, NY 13902

Re: Groundwater Sampling Analysis, Danielewicz Route Landfill Area,
Lockport, New York

Dear Mr. Carney:

Woodward-Clyde Consultants is pleased to present the results of the analyses of groundwater samples collected from wells located near the Norton-McGonigle landfills, Lockport, New York. The work was conducted in accordance with your verbal instructions and is consistent with the requirements of the New York State Department of Environmental Conservation (by letter; May 12, 1982; Paul Eismann, NYDEC to Mr. Peter Carney, NYSEG).

COLLECTION OF SAMPLES

Samples of groundwater were collected from wells 51, 53, 55, 61, 64, 66, 68, 69, and 70 on April 27 and 28, 1982 by Mr. Mark Gallagher of our staff. The well locations are shown in Figure 1. Prior to collection of samples, the wells were purged of a minimum of three times the volume of standing water in each well or until dry (Table 1). Except for wells 53, 66, and 68 which were purged with a stainless steel bailer, well water was pumped with an air piston pump specifically designed and built by Woodward-Clyde Consultants for the purging of small diameter monitoring wells. The pump utilizes compressed air to pump water but the design minimizes the contact of air with water in the well, thereby, maximizing the opportunity for the collection of representative environmental samples.

To collect groundwater samples for subsequent analyses, several types of bailers were utilized. A PVC bailer was used to collect water samples designated for analyses of trace metals; a Teflon bailer for samples designated for analysis of methylene chloride; and a stainless steel bailer for samples designated for analysis of polychlorinated biphenyls



3/12

(PCBs) total organic halogens (TOH), and oil and grease. Prior to collection of samples the bailers were rinsed with pesticide grade methanol (metals and methylene chloride samples) or hexane (PCBs, oil and grease, and TOH samples), which was followed by a rinse with deionized water supplied by Advanced Environmental Systems, Inc. (AES) the analysis laboratory. One bailer full of well water was discarded before a sample was collected in the container precleaned by the analysis laboratory. The analysis laboratory included a trip blank in the sample containers provided, and WCC collected a field blank during the period of collection. The samples upon collection were immediately placed in a cooler containing "blue" ice and returned to the analysis laboratory on the same date as collection. Chain-of-custody of samples was maintained and a record of the sample transfer is available at AES.

CHEMICAL ANALYSES

Groundwater samples were analyzed for trace metals (arsenic, barium, cadmium, total chromium, lead, and zinc), total organic halogens, total polychlorinated biphenyls, methylene chloride, and oil and gas (Appendix A). Barium, total organic halogens, polychlorinated biphenyls, and methylene chloride were not detected in any samples.

Table 2 summarizes the parameters that were detected in groundwater from wells, and provides the Federal Drinking Water Standard Limit and New York State Groundwater limitations for the parameters. Of the samples tested, only arsenic and lead in well 68 exceeded the Federal Standards for drinking water and the State standards for groundwaters. The measured concentrations of these two parameters, however, were not significantly greater than the standards.

CONCLUSIONS

As required by NY DEC, Woodward-Clyde Consultants collected groundwater samples from wells in the area of landfills along the Danielewicz route. Groundwater samples were collected, stored, transported, and analyzed according to U.S. EPA protocols. Groundwater samples were analyzed for the required parameters and showed the following:

1. There is no evidence of contamination of groundwater by organic chemical contaminants, specifically, the total organic halogens, polychlorinated biphenyls, and methylene chloride.
2. Only the concentration of arsenic and lead in one well exceeded drinking water and NYS groundwater standards.

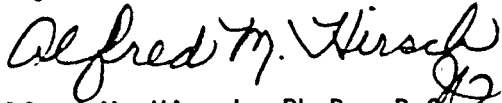
3. Groundwater in the vicinity of the proposed cut is not significantly contaminated.

4/12

These analyses confirm our previous conclusions (WCC, January 15, 1982) concerning the probable impacts of the construction of the railroad cut on groundwater and surface water quality.

Thank you for the opportunity to work on this interesting project. Should you have any questions, or need additional service, please do not hesitate to call us.

Very truly yours,



Alfred M. Hirsch, Ph.D., P.G.
Senior Project Geologist



Wayne F. MacCallum,
Project Manager

AMH/WFM;jc
attachments

5/12

Table 1. VOLUME OF WATER REMOVED PRIOR TO SAMPLING.

<u>Well</u>	<u>Estimate of Volume in Well (gal.)</u>	<u>Volume Purged¹ (gallons)</u>
51	0.8	<u>1.2</u>
53	1.9	<u>4</u>
55	1.9	<u>7.5</u>
61	2.3	10
64	3.2	9
66	1.8	<u>4</u>
68	0.8	<u>1</u>
69	1.4	6
70	2.0	9

¹As underscored value means that well was pumped dry.

6/12

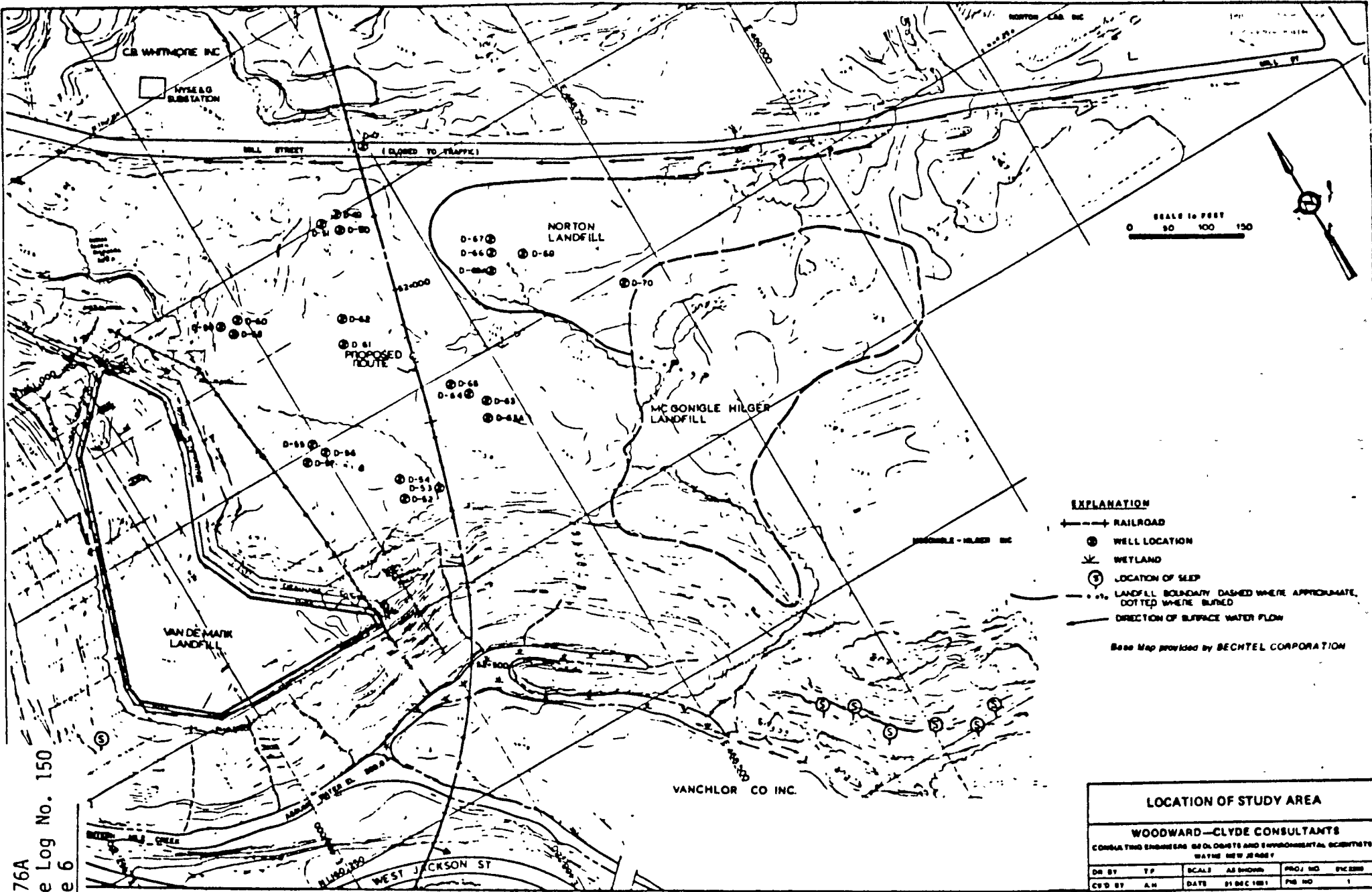
Table 2. PARAMETERS DETECTED IN GROUNDWATER SAMPLES.

Parameter						
Well	Arsenic	Cadmium	Chromium	<u>L</u> <u>Head</u>	Zinc	Oil & Grease
51	ND	ND	ND	ND	ND	0.35
53	ND	ND	ND	ND	0.130	ND
55	ND	ND	ND	ND	0.160	0.93
61	0.010	ND	ND	ND	ND	1.51
64	0.010	0.004	ND	ND	0.115	0.37
66	0.014	ND	ND	ND	ND	0.38
68	0.050	0.005	0.008	0.066	ND	0.75
69	0.010	0.003	ND	ND	0.18	0.08
70	ND	ND	ND	ND	0.115	3.17
Standard						
Federal ¹	0.05	0.01	0.05	0.05	5.0	None
State ²	0.025	0.01	0.05	0.025	5.0	None

¹Federal primary drinking water standard.

²6 NYCRR 703; Groundwater Classification and Quality Standards.

7/1



60776A
File Log No. 150
Page 6

EXPLANATION

- RAILROAD
- WELL LOCATION
- WETLAND
- LOCATION OF SEEP
- LANDFILL BOUNDARY DASHED WHERE APPROXIMATE, DOTTED WHERE SURFED
- DIRECTION OF SURFACE WATER FLOW

Base Map provided by BECHTEL CORPORATION

LOCATION OF STUDY AREA					
WOODWARD-CLYDE CONSULTANTS					
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS WAYNE, NEW JERSEY					
DR BY	T.P.	SCALE	AS SHOWN	PROJ. NO.	PNC 2288
CD'D BY	A.H.	DATE	21 DEC 1981	PLO. NO.	1

ADVANCED ENVIRONMENTAL SYSTEMS, INC. (continued)

MONITORING and SUPPORT LABORATORY

Location:

Bell Aerospace Textron
Building No. 75
Walmore Road (Gate 6)
Niagara Falls, New York

ATTACHMENT A

P.O. Box 165
Niagara Falls, N.Y. 14304
(716) 731-3291

June 1, 1982

Dr. Al Hirsch
Woodward-Clyde Consultants
5120 Butler Pike
Plymouth Meeting, Pennsylvania 19462

Dear Dr. Hirsch:

With this letter you will find our report for analysis which we performed on nine (9) groundwater samples submitted to our laboratories on April 27, 1982.

If you have any questions regarding this report, or if we can be of further service, please call me at (716) 731-3291.

Thank you for your confidence in our services.

Sincerely,

ADVANCED ENVIRONMENTAL SYSTEMS, INC.

Robert J. Brombos

Robert J. Brombos
Laboratory Director

RJB/jem
Enclosure - Report VM

WOODWARD - CLYDE CONSULTANTS

JUN 3 1982

PLYMOUTH MEETING

9/12

ANALYSIS OF
NINE GROUNDWATER SAMPLES

Report Prepared For
WOODWARD-CLYDE CONSULTANTS

by
ADVANCED ENVIRONMENTAL SYSTEMS, INC.

WOODWARD - CLYDE CONSULTANTS

JUN 3 1982

PLYMOUTH MEETING

Prepared by:

June 1, 1982

AES - Report VM

Robert J. Brombos
Robert J. Brombos
Laboratory Director

10/12

SCOPE OF WORK

Nine (9) groundwater samples have been analyzed for the following: arsenic, barium, cadmium, chromium, lead, zinc, total halogenated organics (THO), polychlorinated biphenyls (PCB's), methylene chloride, and oil and grease. The analyses were performed at the request of Dr. Al Hirsch of Woodward-Clyde Consultants.

SAMPLE COLLECTION AND CHAIN OF CUSTODY

Samples were collected by Mark Gallagher of Woodward-Clyde on April 27, 1982. The sample bottles were prepared and provided by AES. Chain of custody was immediately transferred to Mrs. Judy McDougall, Document Control Officer of AES.

METHODOLOGY

The analysis for metals was performed by graphite furnace AA in order to meet drinking water standards sensitivity. The procedures used for metals and oil and grease analysis are obtained in "Methods for the Chemical Analysis of Water and Wastes", U.S. EPA 600/4-79-020, March 1979.

THO was determined by extracting the sample with 15% methylene chloride/hexane. The extract was concentrated to 10 ml. and analyzed on a Varian 3700 Gas Chromatograph equipped with a halogen specific Hall detector (Tracor Model 560/700A). Areas under sample peaks were summed and compared to a Lindane standard curve.

Analysis for methylene chloride and PCB's was performed by Federal Register methods 601 and 608, respectively, Vol. 44, December 3, 1979.

11/12

RESULTS

Well #	Arsenic (mg/l)	Barium (mg/l)	Cadmium (mg/l)	Chromium (mg/l)	Lead (mg/l)	Zinc (mg/l)	THO (µg/l)	Tot.PCB (µg/l)	Meth. Cl. (µg/l)	Oil & Grease (mg/l)
D-51	<0.010 ¹	<0.200	<0.001	<0.005	<0.010	<0.050	<0.07	<0.50	<0.01	0.35
D-53	<0.010	<0.200	<0.001	<0.005	<0.010	0.130	<0.07	<0.50	<0.01	<0.05
D-55	<0.010	<0.200	<0.001	<0.005	<0.010	0.160	<0.07	<0.50	<0.01	0.93
D-61	0.010	<0.200	<0.001	<0.005	<0.010	<0.050	<0.07	<0.50	<0.01	1.51
D-64	0.010	<0.200	0.004	<0.005	<0.010	0.115	<0.07	<0.50	<0.01	0.37
D-66	0.014	<0.200	<0.001	<0.005	<0.010	<0.050	<0.07	<0.50	<0.01	0.38
D-68A	0.050	<0.200	0.005	0.008	0.066	<0.050	<0.07	<0.50	<0.01	0.75
D-69	0.014	<0.200	0.003	<0.005	<0.010	0.180	<0.07	<0.50	<0.01	0.08
D-70	<0.010	<0.200	<0.001	<0.005	<0.010	0.115	<0.07	<0.50	<0.01	3.17
Trip Blank	<0.010	<0.200	<0.001	<0.005	<0.010	<0.050	**2	**2	<0.01	0.24
Field Blank	<0.010	<0.200	<0.001	<0.005	0.010	<0.050	<0.07	<0.50	<0.01	0.48

¹ (<) Less than equals the limits of detection.

² No Sample

QUALITY ASSURANCE

I. Accuracy

Table 2. Results of EPA Test Standards and Spiked Samples

Analysis	Type	Units	Original Concen.	Added Concen.	Expected Concen.	Observed Concen.	Acceptable 95% Confidence Limits
Arsenic	Spike	mg/l	0.005	0.025	0.030	0.027	0.026 - 0.035
Barium	Spike	mg/l	1.1	5.0	6.1	6.2	4.9 - 7.6
Cadmium	Spike	mg/l	0.002	0.003	0.005	0.005	0.004 - 0.006
Chromium	Spike	mg/l	<0.002	0.020	0.020	0.021	0.016 - 0.025
Lead	Spike	mg/l	0.033	0.010	0.043	0.040	0.035 - 0.050
Oil & Grease	Std.	mg/l	112.0	-	112.0	89.7	89.6 - 100.0
Methylene Cl.	Spike	µg/l	<0.01	3.7	3.7	2.9	2.5 - 4.9
THO	Lindane Spike	µg/l	<0.05	132.0	132.0	119.0	112.0 - 143.0
PCB	EPA	µg/l	8.44	-	8.44	8.04	7.5 - 9.5

RECEIVED

NOV 12 1982

JOB 14313



RECRA RESEARCH, INC.

Hazardous Waste And Toxic Substance Control

November 9, 1982

Mr. Richard Donaho
Somerset Railroad
240 Michigan Street
Lockport, NY 14094

Dear Mr. Donaho:

Please find enclosed the report regarding the laboratory evaluations performed on the sample of "Drum Waste Liquid" received at Recra Research, Inc. on October 29, 1982.

If you have any questions or if I can be of further assistance to you, please do not hesitate to contact me. We look forward to being of continued service to you in the future.

Sincerely,

RECRA RESEARCH, INC.

Brian C. Senefelder
Chemist
Waste Materials Management

BCS/pcb
Enclosure

I.D. #2W-148/82-1074

WASTE CHARACTERIZATION
performed for
SOMERSET RAILROAD

Report Date: 11/9/82

PARAMETER	DRUM WASTE SAMPLE
Form	Liquid
Color	Green
Viscosity	Medium-high (mayonnaise-like)
Turbidity	Opaque
Solids	<5% suspended solids (extraneous material)
Odor	Cleaner/disinfectant-like (strong)
Layering	None observed
pH	8.78
Density @ 25°C	1.07 g/ml
% Total Solids @ 103°C	34.0%
Ash Weight @ 600°C	3.3% by weight
Flash Point (Pensky-Martens Closed Cup Tester)	>165°F
Heat of Combustion	3,270 BTU/lb 29,190 BTU/gal
Organically Bound Chlorine	0.26% by weight
Miscibility	Miscible with acetone, methanol, and water. Immiscible with toluene and hexane.
Burn Test	Does not readily ignite with an open flame; does not appear to be halogenated.
t-Ammonia	<1 mg/l
Cyanide Spot Test	Negative
t-Phenol	~175 mg/l
Reactivity with concentrated HCl at pH 1.83	Cloudy, white liquid (milk-like), no visible fumes or gases.
Reactivity with 50% NaOH at pH 12.58	Returned to green color, no visible fumes or gases.

COMMENTS: All analyses were performed in basic accordance with ASTM/EPA methodologies, where applicable. Ammonia and Phenol tests were performed using CHEMETRICS test kits.

FOR RECRA RESEARCH, INC.

DATE

Brian C. Lenz
11-9-82



RECRA RESEARCH, INC.

HAZARDOUS WASTE ASSESSMENT
performed for
SOMERSET RAILROAD

Report Date: 11/9/82

INTRODUCTION

The sample of drummed waste liquid was received at Recra Research, Inc.'s Tonawanda, New York laboratory on October 29, 1982. The sample was evaluated for the characteristic of corrosivity, ignitability, reactivity, and EP toxicity as defined in the May 19, 1980 Title 40 Code of Federal Regulations, Part 261, Subpart C.

CORROSIVITY

Section 261.22(a)(1) of the Title 40 CFR states that a solid waste exhibits the characteristic of corrosivity if a representative sample of the waste is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5.

In accordance to U.S. EPA protocol, the pH of the waste sample was analyzed to be the following:

Drum Waste Liquid: 8.78

Based on the analyzed pH value, the waste sample does not exhibit the characteristic of corrosivity.

IGNITABILITY

The waste sample was evaluated for the characteristic of ignitability on the basis of its flash point determination only.

Section 261.21(a)(1) of the Title 40 CFR states that a solid waste exhibits the characteristic of ignitability if a representative sample of the waste is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79.

Utilizing a Pensky-Martens Closed Cup Tester and the test method specified in the ASTM Standard D-93-79, the flash point of the waste sample was determined to be the following:

Drum Waste Liquid: >165°F

Based on the flash point determination, the waste sample does not appear to exhibit the characteristic of ignitability.



REACTIVITY

Section 261.23 of the Title 40 CFR states that a solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

- 1.) It is normally unstable and readily undergoes violent change without detonating.
- 2.) It reacts violently with water.
- 3.) It forms potentially explosive mixtures with water.
- 4.) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
- 5.) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.
- 6.) It is capable of detonation or explosive reaction if it is subjected to strong initiating source or if heated under confinement.
- 7.) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.
- 8.) It is a forbidden explosive as defined in 40 CFR 173.51, or a Class A explosive as defined in 40 CFR 173.53, or a Class B explosive as defined in 40 CFR 173.88.

Based on the following observations only, the "Drum Waste Liquid" sample does not appear to exhibit the characteristic of reactivity.

- 1.) The waste sample was normally stable and did not readily undergo violent change when exposed to the atmosphere.
- 2.) The waste sample did not react violently with water.
- 3.) The waste sample did not form potentially explosive mixtures with water.
- 4.) When mixed with water, the waste sample did not generate any observable gases, vapors nor fumes.
- 5.) The waste sample did not generate any other physically observable gases, vapors or fumes when exposed to pH conditions between 2 and 12.5, except those that were associated with the sample as received.



- 6.) The waste sample does not appear to be readily capable of detonation nor explosive decomposition or reaction at standard temperature and pressure.

NOTE: The "Drum Waste Liquid" sample was not evaluated to determine if it had any of the following properties:

- 1.) If it was capable of detonation or explosive reaction when subjected to a strong initiating source or if heated under confinement.
- 2.) If it was a forbidden explosive as defined in 40 CFR 173.51, or a Class A explosive as defined in 40 CFR 173.53, or a Class B explosive as defined in 40 CFR 173.88.
- 3.) The waste sample was not analyzed to determine if it was a cyanide or sulfide bearing waste.

EP TOXICITY

The waste sample was subjected to the EP Toxicity Test procedure as defined in Title 40 CFR, Part 261, Appendix II.

The waste sample contained greater than 0.5 percent filterable solids; therefore, it was extracted according to protocol.

The resultant extract was analyzed for the metal contaminants only as listed in Section 261.24, Table 1, of Title 40 CFR. The results of these analyses are listed in Table 1 of this report.

The analyzed metal contaminants of the EP Toxicity Test Extract do not exceed the maximum allowable concentration listed in the October 30, 1980 amended Title 40 CFR. Therefore, the sample of "Drum Waste Liquid" does not exhibit the characteristic of EP Toxicity (for metals only).

FOR RECRA RESEARCH, INC.

DATE

Dorian C. Seufelder

11-9-82



6/6

TABLE 1
ANALYTICAL RESULTS

SOMERSET RAILROAD
EP TOXICITY TEST EXTRACT

Report Date: 11/5/82
Date Received: 10/29/82

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION	EPA MAXIMUM CONCENTRATION (mg/l)
		DRUM WASTE EXTRACT	
Total Arsenic	mg/l	<0.005	5.0
Total Barium	mg/l	5.2	100.0
Total Cadmium	mg/l	<0.004	1.0
Hexavalent Chromium	mg/l	<0.004	5.0
Total Lead	mg/l	0.097	5.0
Total Mercury	mg/l	<0.002	0.2
Total Silver	mg/l	<0.001	1.0
Total Selenium	mg/l	<0.005	5.0

COMMENTS: The sample was subjected to the EP Toxicity Test procedure in accordance with protocol specified in the Title 40 Code of Federal Regulations, Part 261, Appendix II. Analyses of the resultant extract were performed according to methods presented in the EPA publication, Test Methods for Evaluating Solid Waste, 1980. Metals analyses were performed utilizing the method of standard addition. Hexavalent Chromium analysis was performed according to the method presented in the U.S. Federal Register of October 30, 1980. This determination was made using flame atomic absorption techniques. Values reported as "less than" (<) indicate the working detection limit for the particular sample or parameter.

FOR RECRA ENVIRONMENTAL LABORATORIES

DATE

R. V. Firm
11/5/82



RECRA ENVIRONMENTAL LABORATORIES

I.D. #82-1074/2W-148

8. ADEQUACY OF AVAILABLE DATA TO PREPARE FINAL HRS

The available data are considered inadequate for preparing final HRS scores. Although there is an extensive network of ground water monitoring wells at and near the site, the analyses completed to date have only included metals, PCBs, and volatile organics. Given the nature of wastes in the ruptured drums (phenolics) and the reported oil dumping, ground water should be examined for acid phenolics and base neutral compounds in order to confirm or rule out a release of contaminants to ground water. In the event that ground water contamination is confirmed, the maximum S_M (assuming a highly toxic and highly persistent compound is detected) would be 7.29.

It should be noted that no wells have been installed north of the Norton Labs landfill, which has been determined to be the direction of ground water flow within the landfill. However, given the available data, the need for a downgradient shallow well is not anticipated, particularly if existing wells within the fill fail to show any appreciable contamination.

9. PHASE II WORK PLAN

9.1 DETAILED WORK PLAN

In order to rule out the possibility of ground water and/or surface water contamination at the Norton Labs site, additional sampling of existing onsite monitoring wells and surface waters along the railroad cut is recommended. If these data can be obtained from the Somerset Railroad, no Phase II testing is recommended.

9.1.1 Ground Water Sampling

It is recommended that ground water samples be obtained from the following monitoring wells at the Norton Labs site: D-69 and D-70. These samples are to be analyzed for the acid phenolics and base neutral priority pollutants at a minimum. For cost estimating purposes, full priority pollutants are assumed.

9.1.2 Surface Water Sampling

It is recommended that one sample of surface water be collected from along the railroad cut prior to discharge into the wetland at Eighteen Mile Creek south of the Norton Labs landfill. This sample would be analyzed for complete priority pollutants.

9.2 HEALTH AND SAFETY PLAN

Activities

Phase II activities include surface and ground water sampling.

General Corporate Occupational Health and Safety (COSH) Plan

The four levels of personnel protection which have been identified for use in the current project are summarized below.

Level 1: Self-Contained Positive Resource Demand -- Breathing apparatus with fully encapsulated suit.

Level 2: Self-Contained Positive Resource Demand -- Breathing apparatus (4-hour portable or line) with TYVEK-SARAN encapsulated disposable suit (with chemical splash suits as necessary), boots, and gloves (double NEOPRENE over VITON).

Level 3: Air purifying respirator with chemical cartridge (standard organics/acid gases/radionuclides/fumes/mists/dusts/particles), TYVEK-SARAN or poly laminated-coveralls (with hood and booties), safety boots, gloves (NEOPRENE over VITON), hard hats with integral face shield and goggles, and personal first-aid kit.

Level 4: Ibidem Level 3 except respirator use is optional. Respirators must be available in beltpack at all times.

Additionally, specific standard operating procedure manuals will be developed for each phase of work. These manuals include instructions for use of respirators, Draeger tubes, and portable Organic Vapor Analyzers (OVA). Emergency medical information will also be included. Basic field procedures, such as site entry and exit, will be presented.

Norton Labs Site COSH Plan

Level 4 is recommended for all sampling.

9.3 COST ESTIMATE

<u>Work Element</u>	<u>Estimated Cost</u>
Ground Water and Surface Water	
Sampling	2,000
Laboratory Analysis	3,600
Remedial Cost Estimates	2,500
Report Preparation	2,500
Project Management and Administration	<u>2,500</u>
Total Estimated Cost	\$ 13,100

APPENDIX

HAZARDOUS WASTE DISPOSAL SITES REPORT,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

47-15-11(2/80)

HAZARDOUS WASTE DISPOSAL SITES REPORT

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Code: _____
 Site Code: 932029
 Name of Site: NORTON LABS Region: 9
 County: NIAGARA Town/City: LOCKPORT
 Street Address: ~ 520 MILL STREET

Status of Site Narrative:

Norton Labs disposed of plastics and waste lubricating oil.
 During construction of bordering railroad 2 drums were punctured (acc. '82)
 releasing a green solvent. Subsequent analyses found the drum to
 contain phenol and surrounding soil to be PCB contaminated. Previous
 groundwater sampling did not indicate presence of contaminants other
 than low levels of metals.

Type of Site: Open Dump ☐ Treatment Pond(s) ☐ Number of Ponds _____
 Landfill ☒ Lagoon(s) ☐ Number of Lagoons _____
 Structure ☐

Estimated Size ~ 4 Acres

Hazardous Wastes Disposed? Confirmed ☒ Suspected ☐

***Type and Quantity of Hazardous Wastes:**

TYPE	QUANTITY (Pounds, drums, tons, gallons)
WASTE LUBRICATING OIL (SUSPECTED PCB)	2,500 GALLONS
POLYESTER BASED ^{SOURCE} 3 PHENOLIC BASED PLASTICS	1,825 TONS
DRUM W/ PHENOL	2 DRUMS

* Use additional sheets if more space is needed.